



Inside Dope

By GEORGE
F. TAUBENECKLearn to live and laugh —
thus delay your epitaph

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Stories of the Week

Wealthy Senator Kennedy (Democrat, Massachusetts) told this story on himself during the 1958 electoral campaign.

"I was about to tip a taxi driver substantially, and ask him to vote the straight Democratic ticket. Then I remembered an old wheeze. I didn't tip him, and told him he should vote for the Republicans."

"I suppose you all want to go to Heaven, don't you?" stated a Sunday School teacher.

"Of course," spoke up Sue. "Why do you think I put a nickel in the collection?"

She's Sold

The Chicago American has an "inquiring reporter" feature, in which people stopped at random are interviewed on random subjects. A recent quote, from Mrs. Shirley Roberts:

"I went through a miserable summer without air conditioning in my office or my home. I'll get air conditioning this year or I'll go to Colorado."

Do You Qualify?

What would a BOSS be like if he were hired by his own office workers?

He would be a male between 40 and 49 years of age with lots of common sense. Older female workers feel that a high degree of intelligence is vital. Younger women are more interested in an understanding nature.

A "grouch" rates low with young workers; older women are more interested in the boss's mode of dress. Workers like to be called by their first names.

These are findings of the National Office Management Association, a professional society of 16,000 executives. They distributed 20,000 questionnaires to office workers to get a portrait of the latter's "ideal."

Horse and Buggy Refrigeration

Even though most iceboxes vanished years ago, there still

(Concluded on Page 18, Col. 5)

ARW Meets In Los Angeles, San Francisco

First Annual Conclave On Coast Opens Oct. 22

COLUMBUS, Ohio—A program built around the general theme of management and communications development has been arranged for the 23rd annual meeting of the Air-Conditioning & Refrigeration Wholesalers.

ARW's 1958 convention will get under way at the Sheraton Palace hotel in San Francisco on Oct. 22 and continue through Oct. 24. In a unique move, the meeting will reconvene at the Sheraton West hotel in Los Angeles Oct. 27 for a one-day session.

Association officials explained that since this is the first annual ARW convention to be held on the West Coast, continuation of the meeting in Los Angeles is a gesture of recognition for that marketing area.

More than 400 wholesalers and manufacturers are expected

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Re-Elect Ogden As Head of NEMA Room Unit Section

NEW YORK CITY—J. B. Ogden, vice president-sales, Airtemp Div., Chrysler Corp., was re-elected chairman of the Room Air Conditioning Section of the National Electrical Manufacturers Association at a meeting here last week.

L. M. Larkin, general manager, air conditioning division, Whirlpool Corp., was elected vice chairman of the section. Larkin was formerly merchandise manager of the air conditioning division of Whirlpool, and he succeeds Paul Augenstein, president of Chrysler Airtemp.

The election of officers followed the announced resignation of Ogden and Augenstein as officers of the section. Their actions were the result of changes made by them in their company affiliations. Ogden was formerly general manager of (Concluded on Page 37, Col. 4)

Firm's Record Sale Goes to Air Base

SAN ANTONIO—Recent shipment of 27 Recold "Dri-Fan" evaporative condensers to Lackland Air Force Base brings the total of evaporative condensers in use at the base indoctrination center to 117, indicating the extent to which the

(Concluded on Page 37, Col. 5)

NLRB Extends Jurisdiction To Include Many Small Firms Formerly Excluded

WASHINGTON, D. C.—The National Labor Relations Board has extended its jurisdiction to include many smaller firms which previously were denied use of board machinery.

The new standards take immediate effect, applying both to all cases now pending before the agency and to all cases which may be filed.

Under the change in NLRB standards, thousands of business concerns and workers whose labor disputes were regarded as too minor to warrant board attention can now use the board and the provisions of the Taft-Hartley Law.

Passed in 1947, that law gave the NLRB jurisdiction in labor matters involving companies in interstate commerce (except railroads and airlines). How-

(Concluded on Page 37, Col. 2)

IRS Ruling on Room Unit Excise Tax Due

WASHINGTON, D. C.—With the last scheduled meeting with an industry group concluded, the Internal Revenue Service final official version of revised Revenue Ruling 54-462, which will impose the 10% tax on all room air conditioners, may be issued at any time.

The date on which the revised ruling becomes effective could be as early as Nov. 1 this year, or as late as July 1, 1959. However, IRS officials have been quoted as saying that there is little chance that the effective date will be retroactive, no matter the effective date. The

(Concluded on Page 37, Col. 3)

L. A. Studies Plan Checking Proposal

Registered M. E. Would Have To Sign Some Heating, Cooling Plans

LOS ANGELES—A requirement that registered mechanical engineers prepare and sign plans and specifications for comfort heating and comfort cooling systems has been included again in the proposed Los Angeles heating, ventilating, and air conditioning code.

If the proposed code passes the City Council and Mayor in its present form, a new plan checking service will be established in the Mechanical Bureau of the Dept. of Building & Safety. Two mechanical engineers will then be employed for this service.

To support the new service, a plan check fee will be charged, which will be half the charge of the inspection fees for items shown in the plans.

Those submitting the plans must make up and submit a complete schedule of fees due. Registered mechanical engineers would prepare all but smaller jobs.

A proposed revised refrigeration code was not scheduled to come before the board for action for several weeks.

In the current bulletin of the Refrigeration & Air Conditioning Contractors Association of Southern California, Henry B. Ely, executive secretary, notes that the association was successful in eliminating the refrigeration code requirement that mechanical engineers sign plans (Concluded on Page 37, Col. 8)

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Laughna Directs Branch Operations For Airtemp Div.

DAYTON — Promotion of Frederick J. Laughna to director of branch operations for Chrysler Corp.'s Airtemp Div. has been announced by J. B. Ogden, vice president in charge of sales.

Laughna has been manager of Airtemp's New York branch since November, 1950. He succeeds M. T. Bard who recently resigned along with three other top Airtemp officials (as reported in the Oct. 6 issue of the News).

The division has branch operation offices in seven major metropolitan areas of the United States.



F. J. Laughna

Know
where you're
heading . . .
Insist upon
READING!



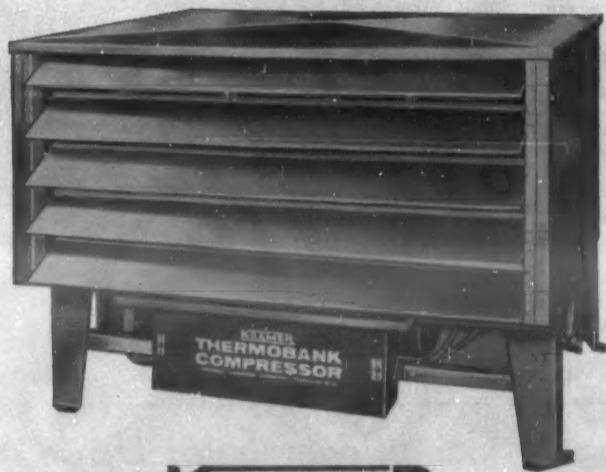
READING COPPER TUBING

truly trouble-free
for Refrigeration &
Air Conditioning Equipment

Made by Copper Tube SPECIALISTS

READING TUBE CORPORATION
EMPIRE STATE BUILDING, NEW YORK 1, N.Y.
WORKS: READING, PA.

LOST space in your building FOUND with



KRAMER

OUTDOOR COMPRESSOR

Why lose dollar-making storage and selling space to house compressors, when you can now use the Kramer Outdoor Compressor? The THERMOBANK COMPRESSOR SYSTEM is factory assembled, tested and run-in; it saves installation time and money.

The refrigeration industry again finds Kramer blaz-

ing a new path with its THERMOBANK SYSTEM—the original and only automatic re-evaporating, non-overloading, fastest hot gas defrost system—now engineered to perform unfailingly, not only in a heated space but in any unheated space or outside at any outdoor temperature.

WRITE FOR BULLETIN TC 406A

KRAMER TRENTON CO. Trenton 5, N.J.

45 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

August Refrigerator, Freezer Sales Top '57

NEW YORK CITY—The National Electrical Manufacturers Association reported that total industry sales of electric household refrigerators and farm and home freezers in August topped those in the same month of 1957.

August refrigerator sales totaled 245,900, compared with 240,500 a year earlier. This brought sales for the first eight months of 1958 to 2,010,600, down from the 2,362,300 units sold in the corresponding period of 1957.

Freezer sales in August rose to 101,400 from 86,000 a year ago.

Sales for the first eight months of this year also were ahead of the 1957 period, amounting to 714,700 as compared with 666,300.

Claim Development Of Better Gas-Fired Absorption System

SAN ANTONIO—As compared with similar systems previously developed, a new gas-fired absorption refrigeration system developed by Southwest Research Institute is claimed to show a 50% improvement in the coefficient of performance, a 30% reduction in fuel consumption, and a 25% reduction in cooling water requirements.

The announcement was made in a paper by Drs. Eugene P. Whitlow, chairman of the Dept. of Chemical Engineering, and Judson S. Swearingen, technical director, Petroleum Technology, Southwest Research Institute, read at a meeting of the American Institute of Chemical Engineers, which was held in Galveston, Oct. 3.

The system can also be used for heating and thus provides year-round air conditioning, the announcement said. It was invented and developed at SwRI in a two-year research program for the American Gas Association.

Lester Scott Dunn, McIntire President, Dies After Long Illness

LIVINGSTON, N. J.—Lester Scott Dunn, president and chairman of the board of The McIntire Co. here, died Sept. 27 after a long illness.

Dunn, designer of the "DFN" system of drying and filtering, was one of the co-founders of the company in September, 1925—which was then known as McIntire Connector Co.

Serving also as chief engineer of the company since its inception, he was one of the industry's pioneers in the field of dehydration. He remained active in the operation of the business until illness curtailed his activities.

He was a member of ASRE.

Not So Fast!

Tax on Clock Portion Of Thermostats In Effect Until Jan. 1

An error in a front-page story in the Sept. 8 issue of AIR CONDITIONING & REFRIGERATION NEWS, which appeared under the headline "Tax Revisions Give Industry Some Benefits," was noted recently by F. C. Cady, assistant treasurer of Minneapolis-Honeywell Regulator Co.

Referring to the statement in the story that the clock portions of thermostats are no longer subject to a 10% retail tax, Cady said:

"I believe you will find on checking that this exemption applicable to the clock portion of thermostats will not become effective until Jan. 1, 1959."

"The amendments made generally by the Excise Tax Technical Changes Act of 1958 are effective on the first day of the first calendar quarter which begins more than 60 days after the date of enactment."



BUT HOW DOES HE GO IN THE AFTERNOON?

A champion is never crowned champion—be it race horse or compressor—on the strength of a sole performance. It has to outperform something else in competition.

You *may* now be buying the best compressors and condensing units in the world . . . and your reject rate *may* be as low as you can reasonably expect. But you are going on pure assumption unless you have pitted them against other makes.

That is what most of our customers have done—with startling and happy results in many cases: reject rates down as much as 75 percent since giving us part of their business.

It's our firm belief that new standards of quality control at Bendix-Westinghouse are turning out the best performing compressors on the market today . . . but we can't prove it to you or begin to save you money until you *order* us to. How about that order?

Bendix-Westinghouse

EVANSVILLE, INDIANA

A Division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio
Export Sales: Bendix International, 205 E. 42nd St., New York 17, N.Y.

Controls Co. of America Sets Up New Sales Div., Distributor Network

SCHILLER PARK, Ill.—An Heating and Air Conditioning internal sales reorganization resulting in the establishment of a new sales division and a nationwide distributor network was unveiled recently by Controls Co. of America at a special one-day sales session at the firm's home offices here.

According to C. M. Stainton, vice president and director of marketing, purpose of the reorganization is to fill a recognized gap in direct sales representation with the low-volume user of solenoids, switches, timers, and synchronous motors for commercial and industrial applications.

Stainton said sales responsibility is now centered in three distinct product groupings:

The first two units had been in existence under the A-P and Soreng names, while the third is newly formed, keyed to achieve the needed degree of sales concentration in industrial and commercial markets, Stainton said.

A principal ingredient in the just-adopted sales formula is the formation of a new distributor network with R. D. Bond & Associates, Ardmore, Pa., serving as the central coordinating

point. Through this agency, Controls Co. plans to utilize sales talents of 17 manufacturer representative agencies with 85 men in the field to service distributor and OEM accounts. The long-range goal is to obtain 60 electronic distributors and 40 electrical distributors.

Norge Names Quayle Executive Vice Pres.

CHICAGO—Appointment of Robert H. Quayle, Jr., as executive vice president of Norge Div., Borg-Warner Corp., was announced by Judson S. Sayre, president.

Quayle resigned as division merchandise manager of Montgomery Ward & Co., in charge of merchandising of all heavy goods. Before joining Montgomery Ward in July, 1956, Quayle was associated with Sears, Roebuck & Co.

TARS Name Dr. Diehl Managing Director

PORLAND, Ore.—Appointment of Dr. H. C. Diehl as managing director of Trans-American Refrigerated Services, Ltd., was announced by Lowell E. Kern, general manager, Terminal Ice & Cold Storage Co. here, who is president of TARS.

Dr. Diehl recently retired as director of The Refrigeration Research Foundation, Colorado Springs, according to the TARS announcement.

George Bayliss Dies After Short Illness

NORTH PLAINFIELD, N. J.—George Bayliss, 64, a refrigeration engineer here for several years, died recently at Muhlenberg hospital, Plainfield, after a short illness.

'Klixon Thermostat' Operation Centered In Versailles Plant

ATTLEBORO, Mass.—Metals & Controls Corp. announced that all "Klixon Thermostat" production, engineering, and sales for commercial applications are now centered at the firm's Versailles Products Div., Versailles, Ky.

Klixon Thermostats used in air conditioners, refrigerators, washers, dryers, electric fry pans, and similar large-volume applications will be manufactured in the Versailles plant. Production of Klixon Precision Thermostats used in aircraft, guided missiles, and electronic equipment will continue at the Attleboro, Mass. plant.

Versailles Products Div. was established by Metals & Controls in 1953 as a supplementary source for Klixon Controls. Because of increasing demands for the firm's electrical controls, facilities at Versailles are now being enlarged by 50%.

G. Gilbert Wood, general manager of Versailles Products Div., is responsible for over-all operation. Robert M. Glidden, formerly sales promotion manager of Metals & Controls, will supervise thermostat applications, development of new designs, and marketing operations.

Steiner To Manage Sales for Payne

LA PUENTE, Calif.—W. J. Bailey, president of The Payne Co., has named William F. Steiner sales manager.

Steiner originally joined the company as a factory sales engineer in the northern California area and subsequently became assistant sales manager before accepting this latest appointment. Payne manufactures heating and air conditioning equipment.

McComas Moves Into Construction Field

LOS ANGELES—Owen L. McComas has moved into a top post connected with the general construction industry from his former position as national sales manager of The Payne Co., division of Carrier Corp.

His new appointment as vice president and manager of business development for Land Title Insurance Co. puts him in general supervision of business development, customer relations, public relations, and advertising.

Beach-Russ Moves General Sales Office

NEW YORK CITY—Beach-Russ Co., manufacturer of rotary high vacuum pumps, compressors, and gas boosters, is moving its general sales office on Oct. 1 to larger quarters in the Graybar building at 420 Lexington Ave. here.

The move to the new location, after over 35 years in the Hudson Terminal building in downtown Manhattan, was made for the convenience of Beach-Russ customers and regional sales personnel.

CUSTOMER'S MAN

Viking customers know this man by reputation . . . if not by name. He is but one of the Viking production-inspection team whose job it is to maintain the quality and performance standards that customers expect and consistently receive in Viking thin-wall copper tube.

By applying their knowledge and skill in the customer's behalf, these men have maintained Viking's reputation for producing thin-wall copper tubing to standards of quality and performance far above normal.

Their efforts toward meeting customers' requirements are being acknowledged daily by repeat orders from the nation's leading manufacturers of air conditioning and refrigeration units and coils.

VIKING
COPPER TUBE CO.
CLEVELAND 10, OHIO
PRECISION DRAWN SEAMLESS COPPER TUBE



Somebody 'Muffed' the Heating System



**cold
cold
baby**

Jeffrey had just been classified as a mobile unit. But, he just couldn't move fast enough to

PORTION of advertisement run by Warm Air Heating Institute of Northern California to help sell comfort rather than price with the installation of a good heating system. A coupon below invited readers to write for a booklet entitled: House Heating Secrets.

Progress Report

Northern California Group Outlines Stamp Plan Results

SAN FRANCISCO — Highlights of the program of the Warm Air Heating Institute of Northern California since its inception April 1, 1956, were related in a "progress report" pamphlet sent recently to warm air heating dealers and contractors, President Emery Lillard reports.

Supported by a "stamp plan" added to the cost of furnaces and heaters, WAHINC's membership of warm air heating and air conditioning contractors, wholesalers, and manufacturers, sought to put before the public the advantages of good design, installation, and service.

The booklet "House Heating Secrets" was written to give homeowners information needed when demanding a good system, and 110,000 copies have been printed.

Radio, magazine, and newspaper advertising has been used to encourage the public to get this booklet. Largest newspaper advertising campaign so far, a quarter-page ad, appeared in 35 daily newspapers Sept. 15.

Contractors, manufacturers, and wholesalers got a preprint of the ad so they could know when to run their own ads with it, in order to obtain maximum effect for the industry.

Among other accomplishments listed in the report:

Simplified heat loss calculation form issued in 1957 for the convenience of contractors was recognized by veterans' offices concerned with home loans.

Production of "The Case of Missing Comfort," a 12-minute color film shown before groups, and to the public at state and county fairs.

Temco Buys Magic Chef Inventory, Chicago To Get First Electrically Heated Bowling Alley—It's Cooled, Too

NASHVILLE, Tenn.—Temco, Inc. here has acquired the inventory, tools, and dies for production of gas and oil space heaters formerly manufactured by the Magic Chef Div. of Food Giant Markets, Inc., under the trade-mark "Magic Chef."

This was revealed in a letter sent by Temco to Magic Chef distributors and dealers.

According to F. Donald Hart, president of Temco, his company will continue to manufacture gas and oil room heaters this year under the trade-mark Magic Chef, and, subsequently, the line will be produced under the trade-mark "Magic-Chef—Wonder Warm," which was acquired in the transaction.

Hart further stated that Temco also acquired in the heating concern in 1927.

transaction, the entire service parts stock inventory and will continue to supply parts for Magic Chef heaters now in the field. A new department will be created to handle the Magic-Chef—Wonder Warm line, which will also be marketed separately from the Temco line of gas heating equipment. Arrangements have been made with Dixie Products, Inc. for Magic Chef salesmen to continue for the balance of the year.

Hart said the transaction was for cash.

R. P. Bon Dies

MILWAUKEE — Reiner P. Bon, 69, president of Bon Heating Co., died recently at St. Joseph's hospital. He founded

CHICAGO—What is said to be Chicago's first electrically heated bowling alley, the Palisades Lanes at 116th and Halsted St., is now in process of design and construction.

The new alley is considered a forward major step in the field of electric heating for large commercial use, making use of heat pumps with reinforced resistance heaters.

According to Irving Drucker, electrical engineer, the plans tend to minimize transmission of the warm or cooled air through lengthy ducts providing an efficient installation.

Associated with Irv Drucker & Associates, engineers, in developing the electrical work are Brown Electric Service and Dolten Heating & Refrigeration

John Wood Names J. H. Gotwals

CHICAGO—Appointment of J. H. Gotwals as senior vice president and general manager of the Heater & Tank Div. was announced by J. B. Balmer, John Wood Co. president.

Gotwals has been a vice president of the division since 1955, and has been responsible for the division's operations in Chicago and Conshohocken, Pa.

BY FARBER DESIGN



*AM-pak... Perfect Package for Air Moving Units

For evaporative condensers, air handling units and heavier heating equipment,

Utility has created AM-pak, an entirely new design priced for high production, combining efficiency with flexibility, strength with perfect dynamic balance. Ranging in diameters from 10 to 36 inches, the rugged blower wheel has 64 specially curved blades, features a conical center disc construction and operates at static pressures up to 6½" W.G. You deliver greater air-power with less horse-power when your equipment is built with AM-pak.

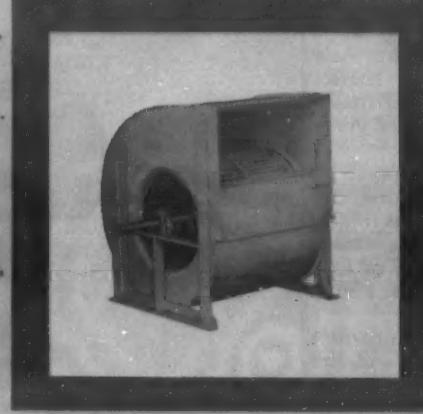
Scroll shapes and wheel diameters can be matched to your exact needs. Let us send you complete data.



UTILITY FAN CORPORATION

911 East 59th Street, Los Angeles 1. International Division, 141 El Camino Drive, Beverly Hills, California. A division of Utility Appliance Corp.

*Air Moving Package.



Unveil 1959 Kelvinator Models**American Motors To Apply 'Rambler' Automotive Concept To Refrigerators, Freezers, and Room Air Conditioners**

GRAND RAPIDS, Mich.—American Motors plans to apply the successful "Rambler" automotive concept to refrigerators, freezers, and room air conditioners.

That's what President George Romney told (although not in these words) several hundred cheering Kelvinator field men, dealers, and suppliers here last week at a showmanlike unveiling of new models.

"The American public," he averred, "is shifting its interest from ego-building to function in its purchase of consumer durables."

"Instead of space-wasting gadgets, we're going to give them the utmost refrigerated space, plus dependability. Refrigeration engineers now will gain the ascendancy which has been usurped by stylists."

Wholesale Prices Up 2 to 4%

Wholesale prices of the new refrigerators and freezers are 2 to 4% higher than 1958 models, it was reported.

Details on Kelvinator's 1959 room air conditioner line, which is said to include a 2½-hp. unit, will be announced later.

Kelvinator's "Style Mark" refrigerators for 1959 provide the "most usable storage in a minimum of cabinet space," plus such new features as a "Cold Mist Freshener" that retains natural moisture and flavor of foods, and the "package pantry" for pre-packaged foods.

E. B. Barnes, Kelvinator general sales manager, revealed the new seven-model "Style Mark" line, which includes two-door refrigerator-freezers, and sizes from 9.5 to 14 cu. ft.

3 Exterior Colors Available on All Models

All 1959 models are available in a choice of three exterior colors: Bermuda pink, buttercup yellow, and surf turquoise, plus white. The crisp, square-corner styling of the 1959 refrigerators fits into any kitchen decor. Doors open flush with cabinets, and the two top models, K79J-14 and K78J-13, can be built-in flush-to-the-wall because there are no refrigeration coils on the back.

"Cold-clear-to-the-floor design, developed by Kelvinator, uses valuable space at the bottom of the cabinet that many other refrigerators do not have," Barnes said. "Storage space equal to five cubic feet is often wasted in refrigerators just to house the compressor and other operating parts," Barnes said, "but Kelvinator refrigerators make use of every inch of space for food."

The Cold Mist Freshener, located at waist-high level for most convenient accessibility, provides a completely enclosed compartment for storage of left-overs, greens for salads, fruits, and vegetables.

A "package pantry" provides convenient storage for odd-size bundles of pre-packaged foods currently popular in modern

supermarkets. A special shelf at the bottom of the refrigerator, the package pantry has adequate height and full width to accommodate the variety of package shapes and sizes.

Portable bottle basket in the door of the new Kelvinator Style Mark model may be removed for loading and unloading. Two convenient handles make it easy to lift out the basket and carry it to a work counter, recreation room or even on a picnic.

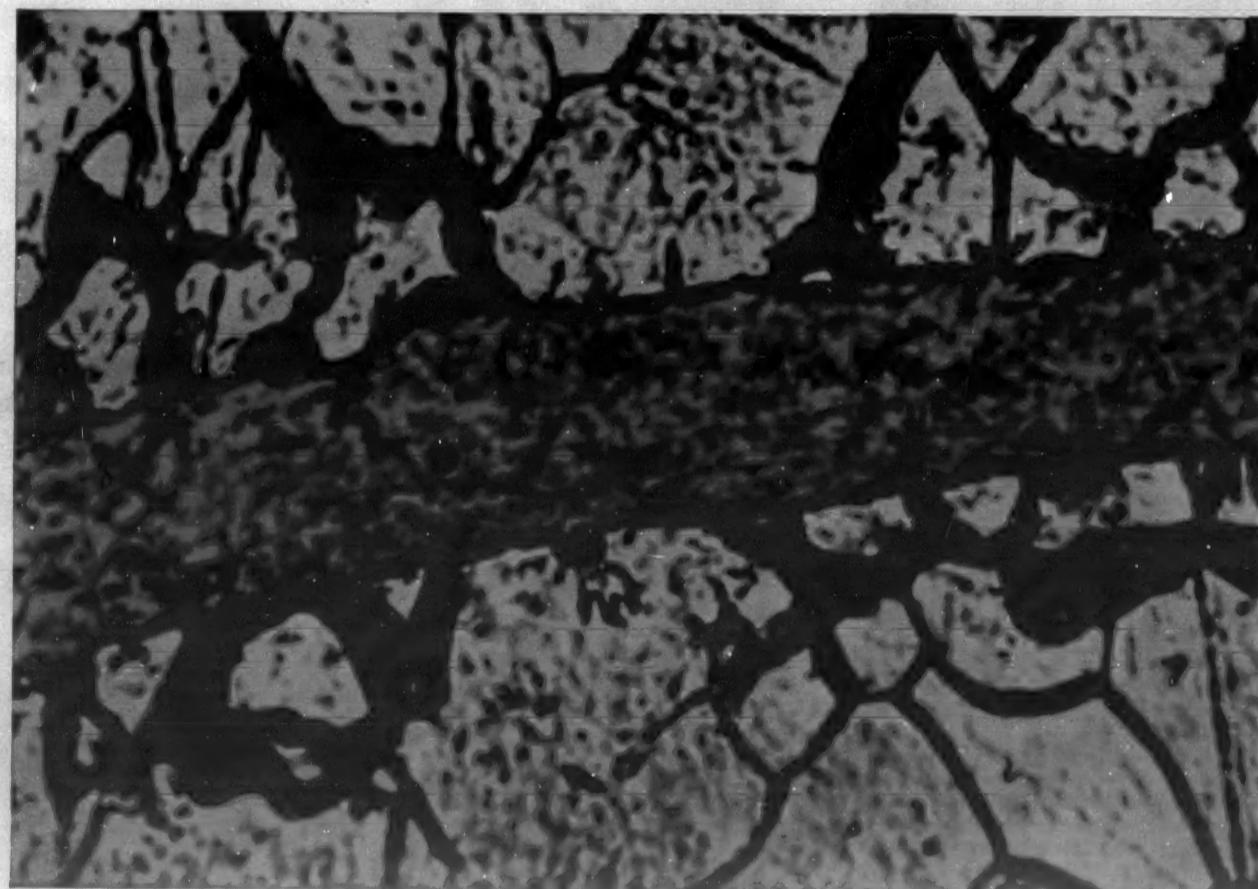
The K78J-13 is a 13.1-cu. ft. model with a separate 100-lb. (Concluded on next page)



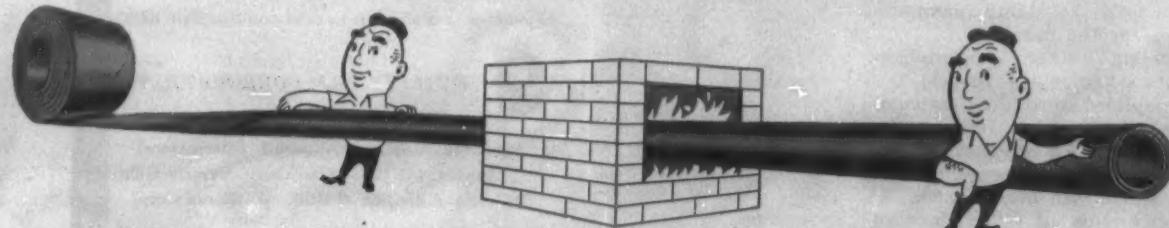
MAGIC STOR DOOR of new Kelvinator "Style Mark" home freezer for 1959 keeps frozen foods safely in place in a handy up-front location for frequently used items. When vertical bar in center of door is raised and locked in "up" position, packages and cans may be easily loaded or unloaded.



LOCATED at waist-high level for most convenient accessibility, exclusive "Cold Mist Freshener" in Kelvinator's new 1959 refrigerators helps foods retain their natural moisture and flavor. Enclosed compartment holds proper temperature, humidity to eliminate need to cover left-overs and keep salad greens fresh.

WHY BUNDY LEADS IN MASS-FABRICATION:**COPPER BRAZING...Another reason why**

And Bundyweld can be mass-fabricated even in the most complex shapes—at a low unit-cost which results from three Bundy advantages:



Bundyweld starts as a single strip of copper-coated steel. Then it's continuously rolled twice around laterally...

into a tube of uniform thickness, and passed through a furnace where copper coating fuses with basic steel.

Result: Bundyweld Tubing—double-walled, beadless, metallurgically bonded through 360° of wall contact.

Kelvinator Line for 1959--

(Concluded from preceding page) food freezer on top. This automatic defrosting model may be completely built-in because the square design fits flush to cabinets, and there are no refrigerator coils on back. The cabinet is 31 in. wide and 65 in. tall.

Model K79J-14 has a 14-cu. ft. capacity, including a separate freezer at the bottom that holds 108 lbs. of frozen food. Measuring 68 in. high and 31 in. wide, this 1959 model may also be built-in.

Two-door refrigerator-freezer model K77J-13 has a 13.1-cu. ft. capacity including a 100-lb. food freezer. An automatic defrosting model, it has stacked porcelain crispers at waist-level for convenient storage of fresh fruits and vegetables. Exclusive package pantry holds pre-packed foods.

Two 12-cu. ft. refrigerators (models K74J-12 and K73J-12) feature waist-level stacked crispers to keep vegetables crisp and fresh, plus package pantry at bottom of cabinet. Door has twin butter and cheese chests plus two portable egg trays.

An 11-cu. ft. model (K71J-11) has a 50-lb. frozen food chest and full-width storage tray that holds an additional 20 lbs. of frozen foods, plus a full-width roll-out drawer in the bottom for storing canned foods before they are put in refrigerated compartment. The 2.5-cu. ft. unrefrigerated drawer may also be used for a variety of other storage purposes.

Only 24 in. wide, model K35J-10 has a total capacity of 9.5 cu. ft. Full-width frozen food chest holds 39 lbs. of frozen foods, and the storage tray be-

low holds an additional 13 lbs.

Seven new "space-engineered" home freezers, designed to provide maximum food storage, also were exhibited.

The new line consists of four upright models in 10, 11, 14, and 18-cu. ft. sizes and three chest models, two with capacity of 15 and one of 20-cu. ft. capacity.

"Space-engineering" has been achieved through the use of high-density, compact insulation and wrapper-type condensers in chest models and the 18-cu. ft upright model, and by square cabinet design and cold-clear-to-the-floor refrigeration in other upright models.

The new home freezer models provide storage flexibility for a variety of package sizes and individual requirements by removable baskets and dividers in chest models, and adjustable shelves and the "Magic-Stor" door in upright models.

Lehman Predicts Appliance Sales In '59

Will Top '58 by About 7%, Cites Trends

TARRYTOWN, N. Y.—Herman F. Lehman, General Motors vice president and head of Frigidaire Div., recently predicted that appliance industry sales in 1959 would be up about 7% over 1958.

Speaking at a preview of Frigidaire's 1959 appliances, he said that 1958 sales would be about 10% below 1957.

Lehman pointed to the following current "buying trends":

This year, for the first time, industry sales of automatic washers and washer-dryer combinations will exceed sales of refrigerators.

The average size of refrigerators sold has grown from 6 cu. ft. in the 1930's, to 8.3 in 1950, to 11.2 this year.

Refrigerators with exterior

color accounted for just over 8% last year, 11% this year.

One built-in range is sold for every two free-standing ranges.

Horizontal, chest-type food freezers still are chosen over the vertical, upright type by 44% of today's buyers.

There is an average of four major appliances per household in the U. S. today compared with 2.2 10 years ago.

Lehman cited five significant demands being made today by buyers of major appliances. They want:

1. Quality manufacturing and the assurance of good service.
2. Ease of cleaning.
3. Simplicity in product appearance and operation.

4. Quiet operation.
5. Meaningful features that solve some fundamental problem or eliminate some basic household chore.

"Mere gadgets have lost their attraction," he said. "What the homemaker wants is an honest-to-goodness better mousetrap."

'Frigi-Foam' Selected as Name for Frigidaire's New Rigid Insulation

TARRYTOWN, N. Y.—"Frigi-Foam" has been selected as the name to identify the new rigid foam insulating material developed recently by Frigidaire Div. of General Motors.

Herman F. Lehman, GM vice president and head of Frigidaire, revealed the new name in a talk at a preview here of the division's 1959 appliances.

The new insulation is a combination of "Urethane" and "Freon." Lehman said use of the insulation ultimately will make it possible to increase the interior capacity of refrigerators considerably without changing exterior dimensions.

Whirlpool Shows Miracle Gas Kitchen to AGA

ST. JOSEPH, Mich.—A gas-powered home heating, cooling, and air purification unit is one of the features of the new "RCA Whirlpool Miracle Gas Kitchen" to be unveiled for the first time at the American Gas Association convention Oct. 13-15 in Atlantic City, N. J., Whirlpool Corp. announced.

A new gas power burner that provides "greatly improved efficiencies" will be utilized in the Miracle Gas Kitchen.

The power burner achieves its efficiency through a method of mixing controlled amounts of primary air with the gas, it was explained. No secondary air is consumed in the process of combustion. Whirlpool engineers claim that "efficiencies not even dreamed of previously will soon be a reality."

Surface units, utilizing the power burner principle, will be shown in the Miracle Gas Kitchen. An outstanding feature of these units, aside from the efficiency, is their flush installation, thus providing ease of cleaning, the company said.



Photomicrograph of cross-section shows how Bundyweld Tubing is metallurgically bonded through 360° of double-walled contact.

Bundyweld prevents refrigerant leakage

This tubing was passed through a furnace where its copper coating fused permanently with base steel. It's just one of three reasons why Bundy leads in the modern art of mass-fabrication.

Bundyweld Tubing is copper-brazed to remain leakproof by test. Halogen detectors sensitive to leaks as small as 1/100 ounce a year can find no fault in Bundyweld. No wonder it's the standard of the industry for condensers and evaporators, compressor parts and refrigerant lines.

Free design service is yours at Bundy. Engineers famous for solving tricky tubing problems will work with you at any stage in the creation of a product; help you get parts at lowest unit cost.

Expert fabrication service is another Bundy specialty. From 80-ft. serpentines to tiny capillaries, skilled technicians will turn out parts to your specifications; deliver them on time, ready to use.

Find out how it pays to check first with Bundy on any tubing problem. Call, write or wire us today!

BUNDY TUBING COMPANY • DETROIT 14, MICHIGAN

WORLD'S LARGEST PRODUCER OF SMALL-DIAMETER TUBING • AFFILIATED PLANTS IN AUSTRALIA, ENGLAND, FRANCE, GERMANY, AND ITALY

There's no real substitute for

BUNDYWELD® TUBING

Bundyweld and Bundy specialty tubings are sold through distributors in principal cities

Air Cooled and Evaporative Condensers Analyzed, Compared by C. W. Pollock

LOS ANGELES—Fundamentals of design and application, equipment comparisons, and cost analyses of air-cooled and evaporative condensers were recently presented before industry groups on the West Coast by C. W. Pollock, Drayer-Hanson's manager of air conditioning and refrigeration.

"Some of the numerous things that may determine the final decision as to which system is best suited for a given installation," Pollock pointed out. "Maintenance of evaporative condensers in the smaller sizes is proportionally greater than in larger systems."

Said Pollock, "Installed cost for an air-cooled condenser may run all the way from no greater to as much as 15% greater, depending principally on whether

ous to consider the simplest installation. It is obvious with the advent of pre-charged equipment and lines with quick-connect couplings that the air-cooled condenser with its lack of water service and sewer connections has an installation advantage over the evaporative condenser.

"In other cases," the speaker stated, "the motor capacity may already be available as the next smaller size would be too small even with lower condensing temperatures. Many times the additional compressor capacity may be available by speeding up the compressor as the trend among compressor manufacturers is to use each compressor for several tonnage ranges by varying the speed.

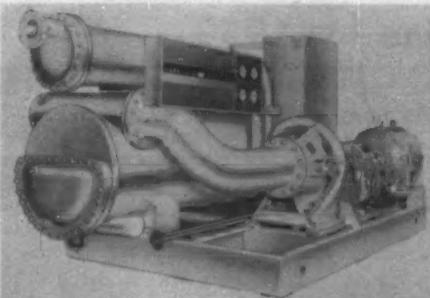
"In these cases the fact that no water supply at all is needed will dictate the choice of air-cooled equipment. In other cases where the installed cost may run considerably more, the freedom from dependence upon an uncertain water supply may assume an importance considerably in excess of the difference in installed cost."

"When selling to a mass market," he said, "it is advantage-

a larger size motor and compressor must be installed to meet design conditions if peak load and highest ambient happen to coincide.

"In other cases," the speaker stated, "the motor capacity may already be available as the next smaller size would be too small even with lower condensing temperatures. Many times the additional compressor capacity may be available by speeding up the compressor as the trend among compressor manufacturers is to use each compressor for several tonnage ranges by varying the speed.

"In these cases the fact that no water supply at all is needed will dictate the choice of air-cooled equipment. In other cases where the installed cost may run considerably more, the freedom from dependence upon an uncertain water supply may assume an importance considerably in excess of the difference in installed cost."



FOR WATER COOLING applications up to 350 tons this completely packaged, one-piece system is said to be fully factory-assembled including all controls, motor starter, control piping, and wiring. Additional design drawings for normal applications are not necessary, according to York Corp., subsidiary of Borg-Warner, manufacturer of the unit.

Dehumidifiers Enable Savannah Port To Handle Hydroscopic Fertilizer Materials Year-Round

SAVANNAH, Ga.—To maintain hydroscopic fertilizer materials at the desired humidity level, the Stevens Shipping Co. has installed dehumidifiers at its new bulk storage facilities on Hutchinson Island here.

Specially designed by the Bryant Div., Carrier Corp., dehumidifiers are installed in two

warehouses having a capacity of 35,000 tons of fertilizer materials.

Savannah is the first port south of New York City to have such facilities, according to Frank K. Peebles, Stevens vice president.

"Instead of limited seasonal deliveries of fertilizer, we will now be able to accept it at Savannah year around. The humidifier will enable manufacturers to maintain stocks at Savannah without the heavy loss due to a breakdown in the material because of humidity."

Reilly's, Inc. handled the installation of the equipment.

Alabama Fabric Producer Air Conditions New Drawing-In Room

ALEXANDER CITY, Ala.—In line with product improvement and higher quality yarn goods, Russell Mfg. Co. is building a new air conditioned drawing-in room.

A huge modernization program is under way at the local plant, which produces fabrics for dresses and sports wear.

Georgetown, S. C. Will Get Air Conditioned Plant

GEORGETOWN, S. C.—A dress manufacturing plant with an eventual \$650,000 payroll will locate in Georgetown, according to George Hedger, executive secretary of the local Chamber of Commerce. Hedger said the factory building will contain 30,000 sq. ft. of space and will be air conditioned.

For Your Reprint Copy
"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich. Only 25¢ each.



LOOK... IT'S EASY
to control residential air conditioning with Penn's newest "centers" and RIMSET thermostat!

That is one of the big reasons why more and more air conditioning manufacturers are switching to Penn! Here are a few additional reasons...

Penn's RIMSET thermostat handles 12 different cooling and heating jobs. Interchangeable sub-bases are available... thermostat fits them all... just plug it in. And, it's easiest to read, easiest to set... just dial the rim.

Penn's residential control centers are compact and designed to save installation time with their factory-wired internal circuits. For air conditioning systems with remote condensing units, the *Fan Center* controls air handling equipment while the *Cooling Center* controls remote condensing unit or water chiller.

System Center

For self-contained air conditioning systems, the Penn *System Center* electrically interlocks in one unit all cooling-heating functions.

Include Penn in your designs to get the finest year 'round air conditioning performance. Write to the factory for the complete story.

PENN CONTROLS, INC. Goshen, Indiana
EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N.Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

NOLIN
Leads the Field



WITH THE
Dry Beverage Cooler

- LEADS IN CAPACITY
- LEADS IN QUALITY
- LEADS IN PERFORMANCE
- LOWEST IN PRICE

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MONTGOMERY, ALABAMA

Longest, Most Successful Season**Air Conditioning Benefits Actors and Attendance at Stratford Festival Theatre**

STRATFORD, Ont., Can.—Both actors and attendance benefited from air conditioning this past summer at the Stratford Festival Theatre here.

The famed international theatre on the banks of the Avon in the Canadian village, namesake to Stratford-on-Avon, Shakespeare's home in England, recently completed its sixth annual season.

According to Tom Patterson, native of Stratford and originator of the theatre festival idea, "it was the longest and most successful season of the five previous." Some 180,000 people attended 99 performances of three Shakespearean dramas alone.

Each year, it seems, at least one new accomplishment has been undertaken to better the Festival since more than 3,000 donors, largely of Stratford, contributed to build a living memorial to the classical poetry of the immortal Bard.

The major addition this year was a \$400,000 air conditioning system for the \$2.1 million circular structure, which was in operation for the 12-week summer program.

For the first four seasons at Stratford, plays written principally by Shakespeare were re-enacted under a huge canvas tent seating 1,926. However, conditions inside the tent were inexorably warm.

Actors, who had to move nimbly about under powerful flood lights, found it especially discomforting. Tight-fitting costumes of the Elizabethan era hindered evaporation of perspiration and caused make-up to streak.

In September, 1956, after the fourth annual Festival, work began on a permanent theatre-tent developed by Rounthwaite and Fairchild, Toronto architectural firm. It was built around the original concrete bowl and unique apron stage.

Construction of the new theatre suffered repeated setbacks during the unusually snowy winter.

As a result, only a temporary air-circulating system was available the first year. Year-round heating and cooling was installed for use during the 1958 season.

Farr Prepares Defense In Filter Patent Suit

LOS ANGELES—The patent infringement suit filed against Farr Co. in U. S. District Court by American Air Filter Co., Inc. of Louisville, Ky. will be strongly defended, according to Farr president, R. S. Farr.

He said "our attorneys have gone into this matter carefully and advised us our product does not infringe any valid claim of the patent asserted."

AAF in January filed a similar suit still pending against Continental Air Filters, Inc., also of Louisville.

Their claims are based on an invention for a method and apparatus for filtering air.

'Double Skin' Boosts Efficiency of Air Conditioning In Tulsa Building

NEW YORK CITY—A reportedly unique "double skin" pattern of horizontal or vertical bands or eggcrates that often reduces the heat of the blazing southwest sun was designed to increase the efficiency of the air conditioning in the Warren Petroleum building, Tulsa, Okla.

According to the editors of F. W. Dodge Corp.'s professional magazine for architects and engineers, *Architectural Record*, the "double skin" is supported by floor slabs that extend 5 ft. beyond the exterior wall where they pick up a series of thin, vertical aluminum "T's" which in turn support horizontal bands of dark gray, heat-retarding glass placed at ceiling height.

The auditorium is acoustically designed for even distribution of sounds to all parts of the theatre." Mechanical comfortizing apparatus was installed by English & Mould. Frost, Granek & Associates was consulting engineer for the project.

The more usual kinds of "sunbreakers" tend to build up As the building is located a

mile from the center of the city, complete employee facilities were required. The cafeteria is separated, yet connected to, the nine-story aluminum and glass office block by a travertine and granite terrace which also roofs the lower level service area, easily reached by truck.

Architect: Skidmore, Owings & Merrill; acoustical consultant: Bolt, Beranek & Newman; general contractor: W. R. Grimshaw Co.

Wolverine Tube Opens Plant In London, Ont.

LONDON, Ont., Can.—New plant of Wolverine Tube Div., Calumet & Hecla of Canada, Ltd., is now in full operation producing non-ferrous seamless tubing.

Output is expected to exceed 1 million pounds a month. It includes tubing for refrigeration and air conditioning.

Here it is! one of the new Mueller Brass Co. refrigeration products that are out of this world!

the new

Safety-Master

PRESSURE RELIEF VALVE

safety engineered for high volume discharge



ARW Convention Program--

(Concluded from Page 1)
to attend the conclave, which will feature presentations on business management concepts.

Pre-convention activities include the ARW annual board of directors meeting Oct. 20-21 in San Francisco and the annual golf tournament on Oct. 21 at the Olympic Country Club there. A ladies' program has also been arranged.

The convention program follows:

SHERATON PALACE HOTEL, SAN FRANCISCO

Wednesday, Oct. 22

9 a.m.—Registration, hotel lobby.

Noon—"Kickoff Luncheon"—Gold Ballroom. Presiding: W. J. Hieber, president, ARW. Address: "Selling—The American Way," J. Roger Deas, American Can Co.

2 p.m.—1958 annual meeting—Gold Ballroom. Presiding: W. J. Hieber. Reports of officers and executive secretary; committee reports; election.

5 p.m.—Adjourn.

Thursday, Oct. 23

9:30 a.m.—Business meeting, Concert Room. Presiding: W. M. Wurzbach, Wm. Wurzbach Co.

"The Atom Comes to Town," color movie.

"The Feeling's Mutual," Thom Muir, Refrigeration & Air Conditioning Business.

"Adventures West on a Two-Way Street," R. L. Gibbs, Mueller Brass Co.

Panel discussion. Moderator: Elmer Davey, Davey Sales Co. Noon—Adjourn.

12:30 p.m.—Men's luncheon—Rose Room. Ladies' luncheon—Comstack Room.

2 p.m.—Business meeting—Rose Room. Presiding: Peter H. Askew, Thermal Products, Inc.

"What Can You Do Today to Develop Competent Management for Tomorrow?" Dr. Joseph M. Trickett, University of Santa Clara.

"Credits and Collections," J. A. Walker, Standard Oil Co. of California.

"Hidden Corrosion—Is It Hurting Your Business?" S. S. Babson, Peerless Pacific Co.

4:30 p.m.—Adjourn.

Friday, Oct. 24

9:30 a.m.—Business meeting, Concert Room. Presiding: A. G. Pond, A. G. Pond Co.

"The Magic Key," color movie.

"Communications," Dr. Gordon Gibb, Stanford University.

"Sales and Advertising," Willis Stafford, Detroit Controls.

"Taming Wild Horses," Chas. G. Koopman, Supply Distributors Corp.

Noon—Adjourn.

2 p.m.—Business meeting, Concert Room. Presiding: John M. Shank, Johnstone Supply, Inc.

"Automation—700 Tons Worth," Robert McKee, Pacific Fruit Express.

"Oddities In Refrigeration," Dr. Walter O. Walker, Miami University; consultant, General Chemical Div.

"Products, People, and Profit," Jack L. Homan, Allied Supply Co., Inc.

4:30 p.m.—Adjourn.

6:30 p.m.—Officers reception, Gold Ballroom.

Noon—Luncheon—Regency Room.

2 p.m.—Business meeting, Regency Room. Presiding: Chas. G. Koopman.

"50—20—1 x 1"

4 p.m.—Adjourn.

Jennings Attending Meetings In Europe

NEW YORK CITY—Burgess H. Jennings, director of research, American Society of Heating & Air-Conditioning Engineers Research Laboratory, Cleveland, is in Europe to attend technical meetings in England, Belgium, Switzerland, and Germany.

Gibson Promotes

Chavez, Seltzer

GREENVILLE, Mich.—Two sales executives of Gibson Refrigerator Co., division of Hupp Corp., have been promoted, W. C. Conley, Gibson sales vice president, announced.

Milo J. Chavez, formerly field sales manager of room air conditioners, has been named manager of central air conditioner sales. He succeeds A. F. Johnson.

(Johnson has been appointed district sales manager of southern Florida for Typhoon Air

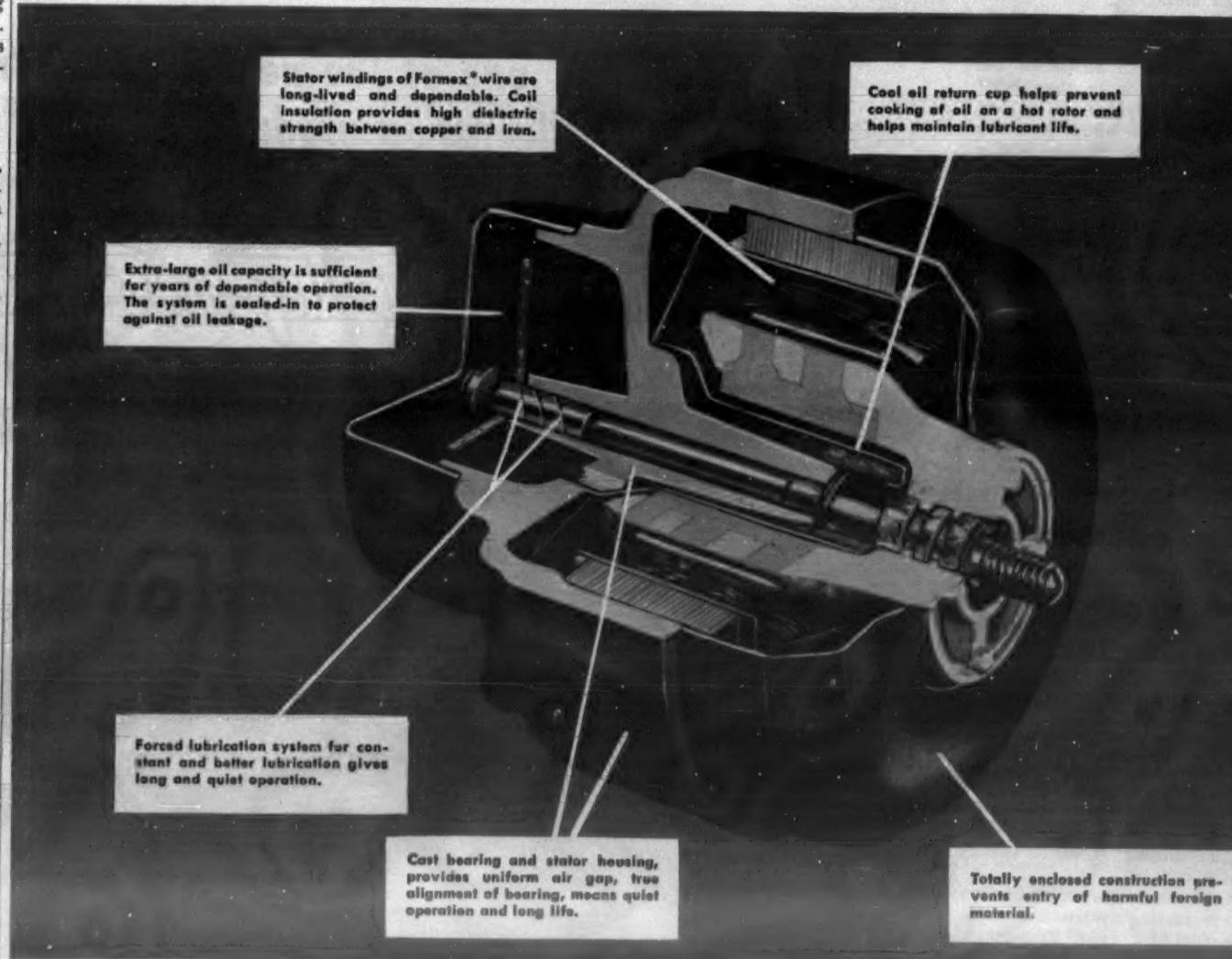
Conditioning Co., Brooklyn, and Typhoon Heat Pump Co., Tampa, Fla., divisions of Hupp Corp., it was announced by John A. Gilbreath, vice president of sales, Typhoon Air Conditioning, and Harry W. Jobes, vice president and general manager, Typhoon Heat Pump.)

Chavez is succeeded by Charles D. Seltzer, formerly with Gibson's Chicago factory branch.

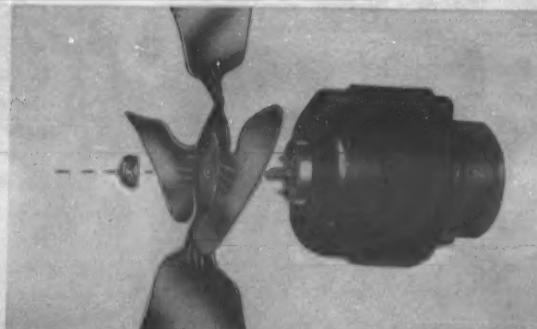
The changes in the Hupp divisional marketing organizations are part of a stepped-up program for room air conditioners, central packaged units, and heat pump heating-cooling systems, Conley said.

From General Electric . . .

THE ULTIMATE IN FAN



STORAGE FOR TRIPLED OIL SUPPLY is provided in a new design of oil storage wicks. New oil has an oxidation life several times that of best oil previously used.



BUILT-IN-HUB AND SPECIAL SHAFT MOUNTING THREADS permit the use of simple, hubless, low-cost fans—saves you money on motor and fan combination.

August Air Conditioner Sales Roundup--

(Concluded from Page 1)
period of 1957, a gain of 261%.

In the Washington, D. C. metropolitan area, room air conditioner sales by distributors in August zoomed to 1,244 from 515 in August, 1957, according to the Electric Institute of Washington. Dehumidifier sales soared too, totaling 2,231 against 117 in August last year.

Reporting that distributor sales of major appliances in the Chicago-area market showed a strong increase during August as compared with August a year ago in 10 or 20 categories, the

Electric Association of Chicago said the leader was central air conditioning units which jumped 460%. Room air conditioners showed a 45% increase.

Figures are based on a survey made monthly by the association and representing reports of distributor sales to dealers and builders in Chicago and the 50-mile-radius area.

Sales of central residential air conditioning units in the area totaled 516, compared with 92 in the previous August. For the first eight months of 1958, central-unit sales amounted to 1,236

against 1,956 in the like 1957 period.

Room air conditioner sales in the Chicago area moved up from 757 in August, 1957, to 1,097. However, sales in the first eight months trailed those in the 1957 period, 30,991 compared with 49,301.

Dehumidifier sales totaled 999 in August and 13,125 in the first eight months of this year, compared with 962 and 15,058 in like periods last year.

Kansas Gas & Electric Co., Wichita, reported that dealer sales of central air conditioners in its service area rose to 86 in August from 69 in July and 75 in August, 1957. However, sales compared with 244 last year,

of these units for the first eight months of 1958 were off 29%, totaling 461 compared with 646 in the like 1957 period.

August room air conditioner sales in the KG&E area amounted to 755, compared with 990 in July, and 939 in August a year ago. First-eight-month sales totaled 6,229 against 6,991 last year, a drop of 11%.

Kentucky Utilities Co. and Old Dominion Power Co. reported that dealer sales of dehumidifiers in their territory in August aggregated 129 and those of room air conditioners totals were 445 dehumidifiers, 572. January-through-August

First-eight-month sales of room air conditioners in that area totaled 1,841, down from the year-ago figure of 2,315. Dehumidifier sales in that period, however, rose to 532 from 411 last year.

Central, Packaged Sales Rise In Nashville

Nashville Electric Service announced that in the year ended Aug. 31, area room air conditioner sales amounted to 10,976, down from the year-earlier total of 12,910 units. However, sales of "centralized and package units" rose to 1,233 from 1,015 in 1957.

It was pointed out that the report covered sales in Nashville and Davidson County as reported by distributors and dealers representing 27 brands of air conditioners.

August distributor sales of air conditioners in the Philadelphia area were reported by the Electrical Association of Philadelphia as minus 593, compared with 23 in the same month last year. These figures, it was noted, reflect return of units sold on consignment in previous months.

For the first eight months of 1958, air conditioner sales totaled 40,914, down from the year-ago figure of 45,509.

A survey made by United Illuminating Co. showed that August sales of room air conditioners in the Greater Bridgeport, Conn. area totaled 62, down two from the previous August. A total of 743 units were sold in the first eight months of 1958, compared with 1,007 in the like period of 1957.

Residential Sales Hit 1,202 for August In Chattanooga Area

The Electric Power Board of Chattanooga reported that dealer sales of air conditioning units for residential applications totaled 1,202 in August and heat pump sales nine. Commercial air conditioning unit sales amounted to 35.

A Washington Water Power Co. report on dealer sales showed that 106 room air conditioners and 42 central units were sold in August in the Inland Empire. For the first eight months, room unit sales aggregated 878 and central unit sales 194.

No comparisons were made with last year in either the Chattanooga or Inland Empire report.

In a report on July sales by dealers in its three-county territory, Tampa Electric Co. indicated that 1,164 room coolers were sold, compared with 988 in July, 1957.

Frank Meyers Dies

BUFFALO — Frank Meyers, 65, one of the city's first electrical appliance dealers, died Sept. 29. He was founder and president of the appliance store bearing his name at 1350 Main St., one of the largest of its kind in western New York.

MOTOR DEPENDABILITY

For use when customer satisfaction with your products may depend on extra dependability of the fan motor

The best testimony to the quality of this motor is that it has stood the test of time—for 21 years it has set the standard for dependability. General Electric now offers a modified version that lasts even longer, provides extra-long service. Here's the story:

Extra-long-life models (both 4- and 6-pole) have been developed for applications such as home freezer systems and condenser cooling fans where low fan and air noise, in addition to extra dependability, is desirable. The extra-long-life features of this General Electric motor include a new oil storage wick system with tripled oil capacity, and a new oil with oxidation life several times that of the best oil previously used.

Quality construction features, such as General Electric's oil retention system and one piece, cast-iron frame help make these fan motors quiet and more dependable in operation.

Combine these construction features with extra safety factors and increased oil supply and you see why you'll enjoy greater dependability and customer satisfaction when you use the General Electric fan motor with its projected extra-long life. It's available at only a modest price

increase over the standard G-E shaded-pole fan motor of this size.

An example of the long life and dependability of a General Electric unit-bearing fan motor is the story of the motor pictured below. In 1937 that motor was taken from the production line and placed on life tests in the General Electric Laboratory. Nineteen years, six months, and two days later it failed. Knowledge gained from this and many other life tests have all contributed to General Electric's progress in making motors better and better.



Like more information on this G-E fan motor? Fill out and mail the coupon below, or contact your nearby G-E Apparatus Sales Office.

*Registered trademark of General Electric Co.

Progress Is Our Most Important Product

GENERAL ELECTRIC

FOR A COPY OF THE FREE BULLETIN, GEA-6134, covering 1½ watts through ½ hp ratings, mail this coupon to Section C632-13, General Electric Company, Schenectady 5, N. Y.

NAME _____ TITLE _____

ADDRESS _____

COMPANY _____

CITY _____ STATE _____

Inside Dope

By GEORGE
F. TAUBENECK

(Concluded from Page 1, Col. 1) is a steady demand for fresh ice sawed from ponds and lakes. Buyers include railroads, meat markets, fishmongers, bakeries, dairies. Michigan, Wisconsin, and Minnesota lakes provide the raw material.

For instance: Michael McCarthy, Marquette ice dealer, cuts 10,000 blocks of ice a year (although in the 1920's he cut up 15,000 blocks annually). Slowly thereafter his business dwindled. However, it has kept close to the 10,000 mark for the last 10 years.

Railroads use cheap lake-ice to keep drinking water cold for Pullman cars, and for section hands. Some air conditioning systems utilize natural ice, too.

McCarthy cuts his ice from a

river in blocks 17 to 20 in. deep. A special machine skims off the spongy top layer, and carves up clear ice below. Afterward a rotary saw cuts this pristine ice into "rafts."

Said ice rafts are floated through a channel, broken into blocks, and poled into a ramp which dumps them into trucks for delivery to a wholesale house.

There the cakes are piled in a walled pit, and blanketed with a thick layer of sawdust.

These cakes are about the right size for railroad cars (which take 22 by 34-in. size).

Profit runs about a cent a pound. That's why an ice cutter really has to work hard to keep his profit from melting away.

Politics as Usual

Reporter returned from a political rally.

"What did Senator Gasbag

have to say?" ughed the night factors in customer relations with dealers as fellow humans.

"Nothing, as usual."

"Um. Hold it down to a column."

Jud Sayre Is Responsible

Automation ultimately may bring about a 30-hour week "age of leisure." But it will give no automatic key to prosperity, according to Judson S. Sayre, president of Norge Div., Borg-Warner Corp.

Sayre states further that marketing experts recognize that the job of expanding distribution has been and will continue to be tied onto the retail dealer and his salesmen.

He scores those pundits who mourn that the day of the franchised dealer in durable consumer goods are numbered. This attitude reflects the concept of the "automated economy," discounting completely the human

where it results in cumbersome organization, increased rather than decreased costs, inadequate top-management and inability to move fast enough to meet and counter smaller competitors who are able to turn with the sudden shifts in market conditions," Sayre reiterates.

From Dale Mericle

"During a trip to Cleveland I spied a roadside sign at the corporate limits proclaiming (in discreet script lettering) that this was the 'Village of Hunting.'

"But directly below in bold, red, block letters was the warning:

"NO HUNTING."

Another Buckeye Tale

Columbus (Ohio) Chamber of Commerce, observing that more than half of this city's traffic fatalities were walkers, has classified pedestrians into 13 different categories — smart, stupid, scrappy, senile, sheepish, shifty, sleepy, soosed, startled, superior, sorry, silly, and superstitious.

Quote of the Week

There is nothing greater in all the universe than personality; and the consequence of its loss is beyond human computation. A highwayman can deprive me of my wealth; but by dint of hard work and frugality, I may in part regain my lost fortune. But a man who, by threats and intimidations, succeeds in reducing my character and personality to a state of spineless insipidity so that I no longer dare or am capable of making vital choices and decisions of my own—he has destroyed a part of my very being. Such a loss is irreparable, for then I shall have lost my own soul.—ERIC EDWIN PAULSON.

Irregular Verbs

Conjugated Irregularly

I am firm; you are obstinate; he is a pig-headed fool.

I am sparkling; you are unusually talkative; he is drunk.

I am beautiful; you have quite good features; she isn't bad looking, if you like that type.

I have reconsidered it; you have changed your mind; he has gone back on his word.

I am an epicure; you are a gourmand; he has both feet in the trough.

I have the New Look... you have let down your hem; she has had that dress since 1934.

I have about me something of the subtle, haunting, mysterious fragrance of the Orient; you rather overdo it, dear; she stinks.

Type Laughs

Town officials are up in arms over the wanton vandalism of one of the flower pots on the Washington Ave. bridge.—Pulaski (Va.) Southwest Times.

The driver, Gerald Blank, and 99 other hogs in the eastbound truck escaped injury.—Toledo Blade.

Virginia and Darryl Zanuck died at LaRue with Tyrone Power.—St. Petersburg Times.

2 MORE IMPORTANT CONTRIBUTIONS TO THE REFRIGERATION INDUSTRY

Designed and Pioneered by **ALCO**



1 The new Alco designed CONTOUR POWER ASSEMBLY

Reduces extreme and unnecessary flexing of the diaphragm. Increases diaphragm life as much as 10 times over other designs. Standard construction on all ALCO "T" Series and "HTL" Valves.

2 The new Alco designed RAPID RESPONSE REMOTE BULB & WELL

- Reduces danger of floodback
- Extra-quick closing response
- Better control over wider range of operating conditions
- Economical to install in package units
- Available on all Alco Gas Charged Valves if specified.

Look to Alco for advances in refrigerant controls.



Call your Alco wholesaler.
Write for Bulletin No. 171-A.

ALCO VALVE CO.

150 KINGSLAND AVE. • ST. LOUIS 6, MO.

- BUY SECURITY
- BUY QUALITY
- BUY ALCO

7890

The one complete line of refrigerant controls: Thermostatic Expansion Valves • Refrigerant Distributors
Solenoid Valves • Suction Line Regulators • Flooded Evaporator Controls and Reversing Valves

New National Bank Of Detroit Bldg. To Get Air Conditioning

DETROIT—Air conditioning will be an important feature of the new 14-story main office building of the National Bank of Detroit, now being erected in downtown Detroit.

Scheduled for completion in 1959, the building will be used entirely for banking, trust, and safe deposit services. It is the first major commercial building erected in downtown Detroit in more than 25 years.

The air conditioning system will include three Worthington "Freon-12" centrifugal refrigeration machines, connected in parallel, with a total cooling capacity of 2,000 tons of refrigeration to chill water for summer cooling. Forty-eight hundred gallons of cooling water per minute will be circulated from the refrigeration machines in the penthouse of the bank building to the air handling equipment on the fourth floor. From the fourth floor air handling equipment room conditioned air will be distributed by a high-velocity duct system throughout the building.

The building was designed and engineered by Albert Kahn Associated Architects & Engineers, Inc.

Birmingham Auditorium Gets 435 Tons of Air Conditioning

BIRMINGHAM, Ala.—Birmingham's enlarged, remodeled, and air conditioned auditorium, which is expected to become the state's focal spot for entertainment, sports events, and conventions, was officially opened recently.

The auditorium has 435 tons of air conditioning throughout the building. It cost \$1/2 million to install. The Hardy Corp., one of the South's leaders in the air conditioning field, had the contract.

"Under the new system," said Fred McCallum, auditorium manager, "one to two hours will be required to cool the entire building. During the winter months, the auditorium will be heated by forced air gas furnace rather than the old stoker furnace. If the gas should be shut off, a standby oil system will go on."

In the foyer and also near the windows in the exhibition hall, where outside cold air will be plentiful, there is radiant heating in the floors.

Cool Mint

Money Plant In Denver Takes Heat Off Workers

DENVER—There were many humorous references to "hot money" and "cold cash" recently when Mrs. Alma Schneider, head of the U. S. Mint here, announced that the building offices and some operating departments will be air conditioned.

A 20-ton cooling system will be used to maintain year-round temperature control in the executive, management, and accounting offices of the big mint building.

\$9,000,000, 25-Story Kroger Building Will Have 1,200 Tons of Refrigeration Equipment

LA CROSSE, Wis.—The new \$9,000,000 Kroger building currently under construction in Cincinnati will be completely air conditioned.

According to Trane Co. Vice President A. C. Menke, Trane has been awarded the order to provide 1,200 tons of refrigeration equipment for the 25-story building, owned and operated by R. E. Dumas Milner, Jackson, Miss.

The building will house the general offices of the Kroger Co., central area long lines offices of the American Telegraph & Telegram Co., and offices of other national and midwestern companies.

The new office structure will

encompass 400,000 sq. ft. of system utilizing window sill distribution and ceiling plenum return.

The building will be divided into four exterior zones and one interior zone, with a multi-zone high pressure air handling unit serving each floor. It was felt this would provide flexibility and reduce the size of the vertical exposure zones.

According to Hedrick and Stanley, Ft. Worth, Texas, architect-engineer for the building, the structure will be garbed in a wrap-around porcelain enamel metal featuring large glass areas. The combination of large glass areas and minimum first cost resulted in the design of a single duct, high velocity

air units will serve the interior zone of the floor on which they will be located and the perimeter zone of the floor immediately above.

In addition to zone control, automatic space temperature control will be available to tenants.

To eliminate the space and

cost requirements of a stack and to hold wiring cost for the large motors to a minimum, the refrigeration and heating equipment will be divided into two portions, it was pointed out.

The Trane refrigeration equipment will be located in the basement and the boiler and water heating facilities will be positioned on the roof. Two sets of piping will be run for the air handling equipment, a set of chilled lines for cooling, and a set of hot lines for heating. This will provide simultaneous heating and cooling as required for various parts of the building.

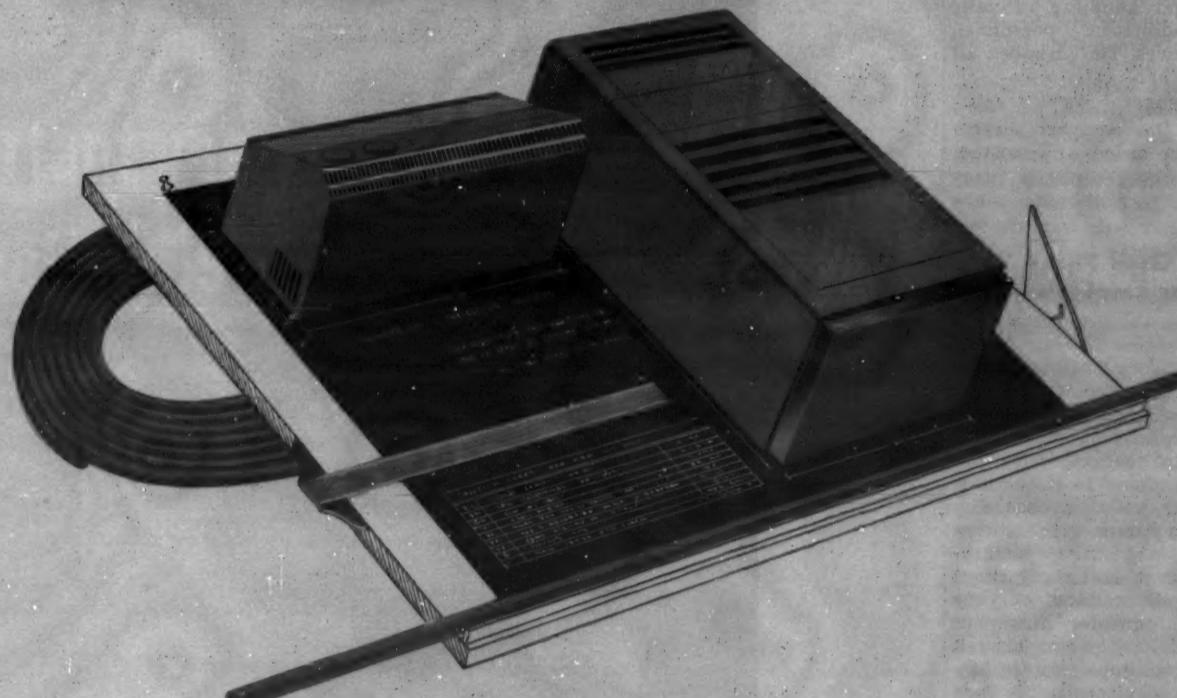
Sam P. Wallace & Co., Dallas, is the mechanical contractor.

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How Small Business Can Keep Effective Records Without Added Personnel (1)

MINNEAPOLIS — Holding that effective record keeping is the most neglected item in small business today, Richard Frank, Frank Refrigeration, decries the current tendency toward either of two extremes—either record keeping is made so complicated that it is not practical for the small shop or no records are kept at all.

Speaking at an educational conference sponsored by the Upper Midwest Regional Association of Refrigeration Service Engineers Society and the William Hood Dunwoody Institute of this city, Frank continued, "One shop can have retail sales, contract service on new products for other dealers, air conditioning service and storage, commercial service, general service, and others.

"It is vital that management know which are making money and which are not."

The small shop can keep records inexpensively, along with normal handling of calls without additional personnel, Frank believes. He classifies all calls into three categories:

1. The general service call.
2. How the contract service calls are recorded and posted.
3. How the records of storage air conditioners are handled.

Need for Good Phone Operator Emphasized

Start with the general service call and *Service Order*.

"Before I go into detail about the Service Order, let me point out the importance of a good telephone operator. This person must be one who can handle the phone in a business like manner with patience. Remember the person who answers the phone is giving your customer the first, and many times the lasting impression, of your business. I consider hiring of the telephone operator, or call taker, just as important as hiring of the serviceman.

"The Service Order Form must be simple but complete, and all parts must be filled in especially the small items, such as the date, the telephone number, and special instruction. We find having these Service Orders printed in duplicate, using a permanent carbon, to be the best for our office system.

"In our office we use two dispatchers, who sit across a desk facing each other with a pigeon hole divider between them. These pigeon holes are open on either side, which allows either dispatcher access to the slips in the pigeon holes. Each serviceman has two pigeon holes indicated with his name. One pigeon hole is marked 'calls taken,' the other marked 'calls to be taken.'

"When the serviceman leaves in the morning he is given only two calls. He separates the carbon from the original of each call, takes the original copy and places the carbon in the pigeon hole marked 'calls taken.' Having only two calls compels him to call us by mid-morning, at which time any emergency calls not anticipated at 8 a.m. are dis-

patched. After the calls are dispatched, they are put in the 'calls taken' pigeon hole by the dispatcher.

"The dispatcher can always go to the 'calls taken' pigeon hole and immediately determine where the man is. He has the telephone number on the call and can easily locate him within minutes, if necessary.

"If you give the man seven or eight calls, you most likely will not hear from him again that day, regardless of how often you ask him to call in. It is just human nature to put calling off until the next call because circumstances might be more convenient. Before he customer's. The customer is

knows it, the day has slipped by. The important thing is, the company must control the men, and not the men control the company.

"The Service Report is the report the serviceman makes out in the home. There are some basic things to remember here. First, it must be written so it can be read. It must be completely filled out—complete with prices, and most important it must be signed by the customer. If there are any questions the customer has, we want them straightened out at this time while all facts are fresh in both the serviceman's mind and the

then left the second copy.

"You might ask how the serviceman knows the prices. We have an understanding: any parts order called in by the serviceman before 2 p.m. can be promised for installation the following day, and any part ordered after 2 p.m. will not be available until the following day. The parts man makes the rounds of all distributors after 2 p.m. for pick-up of parts. Most always, the parts orders are called in ahead so they will be ready when he gets there.

"The parts man uses the *Parts Order blank*. This is very important for it shows the part number, part name, date ordered, cost, and list price. Most important, it shows to whom the order was given, particularly in cases where parts are back ordered.

"This gives us a permanent record of the date the part was

PARTS ORDER				
From Robert Peterson Date 2/9/58				
Address 1075 Newton				To Kelvinator

PARTS ORDER BLANK shows part name, number and price, and date and distributor from whom it was ordered.

ordered and from whom. We have discovered since the distributor personnel have found we keep this record, there have been far less orders lost or misplaced.

"When the parts man gets the part, he then gives the *part* and the *part slip* to the serviceman. As you remember, this part slip



has the part number, name, and price. Thus, he is able to fill out the Service Report and price it on the job.

"Next comes the *Daily Work Sheet*. This probably is the most important sheet of all. It is actually the control sheet from which the payroll is made up. Our servicemen work on productive time basis, but regardless of how they are compensated, you can use the same system because practically all wages are computed on an hourly basis. In as much as we work on an incentive basis, we pay the serviceman a commission on parts he sells, also for leads on new product sales, a commission on calls he collects cash on.

"All this information is taken from the *Daily Work Sheet*. The serviceman lists each call separately, indicating the customer's name, hours spent on the call, service charge, serviceman's

the customer's labor charge, parts charge, serviceman's labor charge, serviceman's credit for parts sales, telephone expense, and commission for C.O.D. calls. This report must be signed and dated and turned in to the service manager.

Service Manager Does Daily Recap

"The *Daily Recap* is done by the service manager. This does not take long, but does compel the service manager to look over the serviceman's reports. Many times mistakes are found. Sometimes the customer has been charged too much, the serviceman has not figured his commission accurately, etc. Also, he familiarizes himself with calls taken the day before.

"In this re-cap, he merely lists the customer's name, service charge, serviceman's

SERVICE MAN	CUSTOMER	Daily Recap		March 1, 1958
		SERVICE CHARGE	SERVICEMAN'S REVENUE	
PETE	MANSKE	\$ 6.90	\$ 2.24	
	LORING	\$ 6.90	2.24	
	THORNSON	\$ 6.90	2.24	
	ANDERSON	\$ 6.90	2.24	
	BECAT	\$ 6.90	2.24	
	PERTAG	\$ 6.90	2.24	
DICK	THORNSON	\$ 6.90	2.24	
	LEVINE	\$ 6.90	2.24	
	MANSKE	\$ 6.90	2.24	
	U.S. COURT HOUSE	\$ 6.90	2.24	
	SULLIVAN	WARRANTY	4.12	
			80.15	67.20
			80.15	OVERHEAD
			\$160.30	

TOTAL SERVICE CHARGE	170.30		
SERVICEMAN'S REVENUE	\$ 80.15		
OVERHEAD	\$ 60.15		
			57.20
			35.40
PROFIT ON LABOR	9.90		
TOTAL PROFIT ON PARTS	\$ 21.80		
PROFIT FOR DAY	\$ 31.70		

DAILY RECAP is done by service manager from servicemen's reports.

revenue, parts charge, and parts cost for the calls each man has taken. When all have been listed, then we can add the various columns up and get an idea of what the day produced.

"If you add column 1, which is Service Charge, you get \$170.20. This is the amount you have billed the customer. Next you add column 2—Serviceman's Revenue—you get \$80.15. This is the amount you have paid the serviceman. Now you must add to the \$80.15 figure the overhead factor which you may have for your own operation. If you don't have one, the figure most generally accepted is 100% of the labor paid out. So if we take \$80.15 and double it for the 100%, we get \$160.30. We then subtract this from column one, or \$170.20. We find we made \$9.90 on labor.

"Now we add column 3, which is our parts selling price or \$57.20, and subtract from that our parts cost of \$35.40. We get a difference of \$21.80. Add the \$21.80 for parts and the \$9.90 profit on labor and we find we made \$31.70 for the day.

Monthly Compilation Reveals Trend

"We keep these figures in a book. At the end of the month we can compile the figures to find a trend for the month. This we do by adding each day the overhead figure, which is the same as paid out in labor, and the profit made on parts. These two factors added together gives us a total of the reserve we set up plus the profit on parts. To make this figure mean anything, we must know what our cost for overhead is per day. This can be found from the Profit and Loss Statement.

"If we know what our overhead is per day, then we multiply the overhead factor by the number of working days in the month. This gives us our total cost. Subtract this from the total of overhead and parts profit and you will have an indication of how the month looks. Again this will indicate only a trend, unless you are absolutely sure of your overhead factors, and there is no fluctuation in it and your actual cost of parts.

"It is not necessary for the service manager to do the adding, as long as he puts the figures down—they can be added at any time. I do feel it very important the service managers see these figures when they are tabulated. It does tell him how his department is running."

(To Be Continued)

Electric Heat Meeting Scheduled for Nov. 6

WASHINGTON, D. C.—Initial meeting of the Joint Industry Program subcommittee on electric heat will be held in the United Association building here on Nov. 6, John M. Rhoades, JIP committee chairman, announced recently.

The subcommittee will study the effect of electric heat on the plumbing-heating-cooling industry.

Committee consists of three representatives of the National Association of Plumbing Contractors, three members of the Mechanical Contractors Association of America, and a United Association observer.

The most important man in this meeting is not present

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Research on Year-Round Air Conditioning In Multi-Level House Started by NWAHACA

URBANA, Ill. — Research Residence No. 4, designed primarily for the study of year-round air conditioning in multi-level homes, has been formally opened and occupied here.

Built by the National Warm Air Heating & Air Conditioning Association at a cost of \$33,000, not counting another \$8,000 for instrumentation and furnishings, the new house will be subjected to extensive studies by the Engineering Station of the University of Illinois Department of Mechanical Engineering.

The residence is occupied by J. Richard Wright, a member of the research staff, and family, who should be experts in avoiding tripping over gauges and in-



RESEARCH Residence No. 4 was built by National Warm Air Heating & Air Conditioning Association at the University of Illinois to permit numerous studies by the university staff on year-round air conditioning in split-level houses.

strument setups since they previously lived in Research Residence No. 2.

The house has 8 rooms and 2½ baths. The eight rooms include four bedrooms, living room, dining room, family room,

and kitchen. The total floor area of living space, not including the two-car garage, is about 1,800 sq. ft. One of the two garages will be used as an instrument room during the investigation.

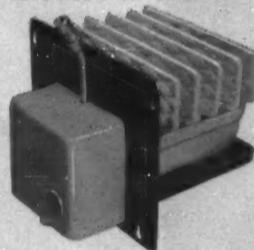
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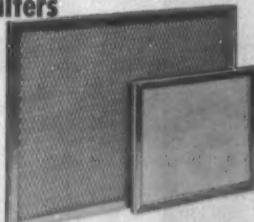


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representative of present day constructions, a furnace having a rated input of 125,000 B.t.u.h. and an air conditioning unit having a rated capacity of 58,000 B.t.u.h. were installed. The furnace is a gas-fired hi-boy type. The air conditioning unit consists of the cooling coil in the bonnet of the furnace and a remote air-cooled condensing unit (condenser and compressor) located behind the house.

The air distribution system was designed and installed in accordance with the methods and practices outlined in the association's manuals. The basic conditioned-air or supply-air system utilizes the perimeter concept of air conditioning on all levels.

The design heat gains and heat losses, which were used to size equipment and ducts, were calculated by the methods of NWAHACA manuals No. 11, "Summer Air Conditioning," and No. 3, "Calculating Heat Losses."

On the basis of these calcu-

House Is Considered In Builder-Designer Class

The house is considered in the builder-designer class. Plans were obtained from a local plan service and modified to meet research needs. J. F. Hyland was the general contractor, and W. W. Johns was the air conditioning contractor. Furnishings and interior decorating schemes were selected by Miss Robbie Blakemore of the Home Economics Department. The furnishings were selected to meet a limited budget.

Wall construction consists of cedar shake siding, insulating sheathing, 2-in. glass fiber insulation, and interior dry wall panel. The ceiling is insulated with 4-in. glass fiber insulation. A portion of the ceiling insulation is enclosed in aluminum foil to permit further study of the reduction of heat loss and heat gain that may result.

Storm sash are provided for all windows and doors. A double glazed aluminum sliding door is used between dining room and patio. The house is considered to have average over-all insulation, making it

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above the floor, are used on the middle level. Floor diffusers are used in conjunction with the dead-end perimeter loop system embedded in the concrete floor of the lower level. Individual extended-plenum trunk ducts are used to supply the round branch ducts on the middle and upper levels.

Five, 6, and 7-in. diameter branch ducts are used in the system. Each level is supplied with conditioned air through its own trunk duct to permit study of zone control. Through the use of zone control the temperature on each level can be independently controlled.

An auxiliary conventional high sidewall supply system has been provided on the upper level. This system will ultimately be used in conjunction with perimeter systems on the other levels. Other supply systems that may be studied include a high sidewall or ceiling supply system on the lower level and a crawl space plenum system on the middle level.

2 Return Air Systems Have Been Installed

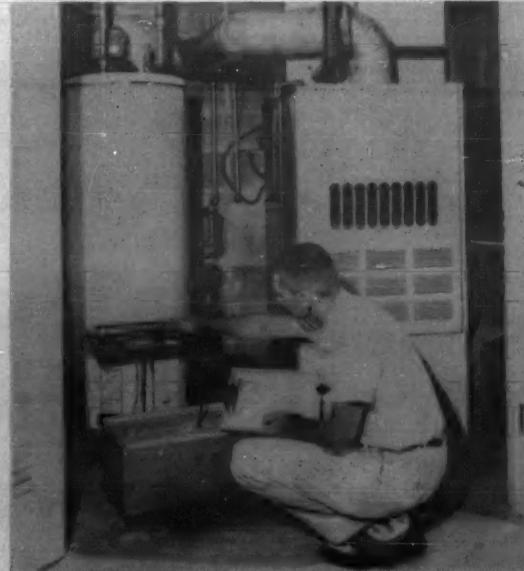
Two return-air systems have been installed. One uses a large central return grille on each level; the other uses individual returns in all rooms except the baths. Except for the ceiling returns on the lower level, the return grilles are located in the baseboard at the inside wall for perimeter conditioning. Duct extensions are provided to permit comparison of baseboard and high wall return grille locations.

The crawl space beneath the middle level is heated by means of two 5-in. diameter ducts. A damper has been provided in the utility room to shut off these runs during the summer.

Sufficient instrumentation has been installed to permit measurement of the many factors affecting comfort, operating cost, and installation practice. Temperatures at 472 locations in the house may be measured at a central station in the instrument room. The temperature sensing elements are copper-constantan thermocouples. About eight miles of wire connect the thermocouples to the electronic indicating potentiometer which is used to measure the temperatures within 0.2° F. accuracy.

Thermocouples are located in the rooms at four levels, in the attic and crawl space, in the ducts, and outdoors to measure air temperatures. Other thermocouples are embedded in the interior and exterior wall surfaces, in the roof and ceiling surfaces, in the floor surface,

ELABORATE instrumentation has been installed in the residence to permit accurate checks of temperatures, etc. This control panel is located in one stall of the home's two-car garage.



CONDENSATE removed from air by cooling unit in Research Residence No. 4 is being checked by Edward J. Brown, research associate.

and in the ground around and beneath the house. Three electronic recording potentiometers are provided so that 24 temperatures can be studied continuously.

Since variations in weather are important, instruments are installed to keep track of significant weather variables. By means of a pyrheliometer and recorder a record is maintained of the amount of solar energy received on the weather surfaces of the house. A cup type anemometer and recorder are used to obtain records of wind velocity, which affects the amount of air leakage around window cracks and other openings in the structure. The wind direction is indicated in the instrument room but is not recorded. The direction of the wind is noted throughout each test.

The amount of heat flowing
(Continued on Page 19, Col. 1)

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Automation Challenges Human Adaptability

WHOLEHEARTED acceptance of Automation is almost automatic among representatives of management. However, mental reservations about this presumed boon to mankind are held by labor leaders, and by the general public.

The latter agree that automation can be a useful development. Some people insist, though, that planned intervention—either through government or through collective bargaining—may be necessary to protect citizens against the alleged side-effects of automation.

These protesters apparently balk at history. Standards of living when machine tools were introduced in the late 18th and early 19th centuries were so low as to be almost inconceivable for you and me.

Nevertheless, the myth that the industrial revolution spread human misery still has a profound influence on attitudes toward technological advancement nowadays.

Too often discussions of automation give undue emphasis to mythical sociological problems it is supposed to produce. Actually, automation can advance only as fast as technologists can devise processes, machinery, and equipment to put it into being.

All that takes a lot of time—and time for workers to readjust to new situations will be in plenteous in that interim period.

Automation will provide new jobs, rather than unemployment. To say that automation will cause labor displacement does not by any means infer that it will bring about breadlines and the dole.

Automation actually will create a lot of new jobs, plus the upgrading of skilled workers. Our a-borning automation industry necessarily must develop new devices, machines, and instruments—which in themselves will constitute substantial new avenues for better employment and higher paychecks.

Let's consider the dial telephone as an illustration of this conceptual prediction. Since its introduction in 1920, operating telephone companies have more than doubled their employment. Reason: lower costs of telephone service resulted in vastly increased use; hence much greater need for telephone service employees.

Adaptability is the answer to technological obsolescence. From 1870 to 1957 productivity of American workers has quadrupled, and the number of persons employed by

private business has increased from 12 million to 60 million.

Realistic estimates of the rate of labor displacement which could result from automation indicate that it will be minor indeed compared to the rate of better labor utilization which can be expected.

Moreover, automation will eliminate many jobs which create special risks to personal health and safety. It should lengthen the productive lives of older workers, and open up new opportunities to men in their fifties and sixties—the “displaced persons” of our era.

More mature management talent will be needed, because more individuals at every corporate level will be making more decisions of a management type—the type which requires the judgment inherent in age-experience.

We now produce twice as much with each hour's labor as our fathers produced just prior to World War I, and four times as much as our grandfathers produced in the 1870's. This remarkable achievement was neither accidental, nor the result of planned intervention by government.

In the chemical industry, for instance, automatic controls do much of the processing. Periodic analyses still are made by technicians to make sure all the controls and mechanisms are functioning properly. This is automation on a limited basis.

In a fabrication industry (metals, textiles, plastics, etc.) automation provides rationalization.

We can divide automation into three distinct types: mechanical transfer machines; feed-back controls (which send information back to instruments that automatically control adjustments), and electronic computers. All are useful to BOTH management and labor.

Some authorities see automation's most profound effect as coming in the office rather than in the plant. Faster processing of information can contribute to leveling out business fluctuations which are by-products of uncertain, incomplete information.

Thus there are ample grounds for assurance that automation is not a bolt of lightning, due to strike us a body blow at some date in the near future.

At a rate which will allow us time for social and individual adaptation, automation will arrive, and bless us all.

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GERMAN PLANT CAN'T KEEP UP WITH DEMAND

Adam Opel
Russelsheim Am Main,
Germany

Editor:

I have seen your article in AIR CONDITIONING & REFRIGERATION NEWS concerning the refrigerator business in Germany. In general it is a very good commentary on the present situation here.

While we produce both product lines within the same plant area in Russelsheim, our production of finished products is in distinctly separate areas of the factory. The only overlap which occurs is in production of basic metal pressings, where our tools are generally changed on a daily basis. One day's pro-

duction may be of a Frigidaire part, and succeeding days' of a different automobile part each day.

At the present time we are unable to satisfy consumer demand in either the automobile or Frigidaire product lines, and are working just as hard as possible in two shifts 5½ days a week the year around to increase production in each product line.

In addition, basic increases in plant facilities have given us in the last several years a considerable increase in automobile capacity and better than a two-fold increase in Frigidaire capacity within 1958 alone.

BARTON BROWN

SEES NEED FOR CREATIVE SELLING OF GAS COOLING

Silco International Corp.
New York 5, N. Y.

I hope and pray for their success.

Editor:

Going through the files I found some reprints of an article you wrote some time ago on the "possibilities and probabilities for gas air conditioning." All I can say in comment to this is "you are so right."

Particularly when you say "gas utilities should be eager and willing and able to aid and abet the growth of the air conditioning business within their industry." Knowing the boys at the A.G.A. I know they are doing a splendid job of convincing the various gas utilities to get behind the program and do exactly what you recommended.

I feel that what is most needed is a well developed creative sales program showing the economics of owning a no-moving-parts air conditioner as against one whose efficiency must gradually decrease as the years wear on. As far as the international field is concerned I am working on this very thing now.

I hope that by 1959 this gas air conditioning picture has crystallized enough that you will feel encouraged to write another one of your very revealing and interesting articles on this subject.

W. H. TIMM

WE DID IT, SAYS ARTIC REFRIGERATION SERVICE

Artic Refrigeration Service
Co., Inc.
Philadelphia 25, Pa.

Editor:

We noticed on page 18 of your weekly paper of Aug. 25 a beautiful write-up about Sam Pearl's Liquor Circus in Westville, N. J. We are proud to say

we installed the equipment showed, however, our name was never mentioned in the write-up.

Thank you just the same for the beautiful showing.

H. BRAVERMAN,
President

NWAHACA Research Residence--

(Concluded from Page 17, Col 5.)

through the walls and ceiling is measured by heat flow meters placed between the insulation and finished ceiling and on the interior surfaces of the walls. When used with a potentiometer these meters permit measurement of the amount of heat flowing into or out of the house.

In addition, instruments are installed to measure pressures at various points in the duct system, the amount of electricity and gas used by the occupants and also by the furnace and cooling unit, the velocity of the air in the lived-in portion of the rooms, the length and frequency of furnace and cooling unit operation.

Although not installed at the present time, it is anticipated that instrumentation will be provided to measure the amount of cold or warm outside air leaking into the house through cracks around doors and windows. To do this, helium gas will be introduced into the house and the time required for it to leak out will be measured. The time it takes for the helium concentration to drop a given amount can be related to the air leakage.

Some Factors To Be Considered

Some of the factors that will be considered in the investigation are: the natural movement of air between open levels that results in overheating upper levels and overcooling lower levels, the proper location of supply outlets and return grilles on each level to minimize movement of air between levels, means of providing warm floors in rooms built over unheated spaces such as the garage, the need for zone control and the best means to accomplish satisfactory temperature control on each level, evaluation of year-round comfort air circulation as it affects temperature control and space air motion, and seasonal and daily load variations on each level.

Plan 2 to 3-Year Study

It is expected that a two to three-year program will be required to evaluate the effect of the many variables involved. Results will become available after the winter investigation, and the results will be included in recommended design procedures. Although the house has been constructed primarily to study multi-level system design, the house layout is such that many other investigations may be carried out. By suitable closures, the performance of year-round systems in a two-story house, a crawl space house, and a concrete slab floor home can be investigated.

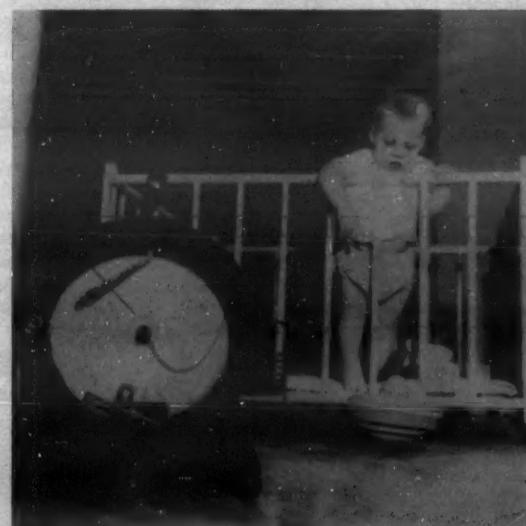
In addition to studying the

Thinking of—

- changing territories
- expanding your territory
- taking on new lines—

Check the
CLASSIFIED ADS

Your opportunity may
be there.



BABY David Wright is much more interested in top than recording thermo-humidograph which helps research work in residence.

performance of the air distribution systems as they affect comfort and cost of operation, investigations will also be made to evaluate the comfort and cost gains resulting from auxiliary load reducing devices such as shading and forced attic ventilation during summer air conditioning. The need for perimeter insulation on concrete slab floors below grade level will also be studied.

Prof. D. R. Bahnhof is in charge of the cooperative research program conducted by the university and the association. Other participants in the work will be Edward J. Brown and Wright.

Otto J. Ress of Mueller Climatrol served as chairman of the association committee planning this project, which also included Edward W. Gettinger of American Furnace, Graydon Peoples of Lennox, and H. F. Randolph of International Heater.

Oppenheim Heads New Baltimore-Washington Branch for Admiral

CHICAGO — Admiral Corp.'s Baltimore and Washington branches have been merged into one division, with headquarters at 2046 W. Virginia Ave., N.E., Washington, D.C., according to Carl E. Lantz, vice president-sales, Admiral Corp.

Under the combined distribution setup, a complete merchandising and pricing program will be presented to Admiral dealers in the enlarged area, Lantz said. To better service dealers in the Baltimore area, American Parts and Service, 1244 W. Cross St., Baltimore, has been appointed the authorized Admiral parts and service depot.

The Baltimore - Washington, D. C. branch will be under the direction of William Oppenheim, general manager.

How can we boost production?

How can we cut tube costs?

How can we get engineering help on tubing problems?

How can we design more efficiently?

How can we find a company that knows refrigeration?

How can we reduce service problems?

If these are questions you are asking — ask us

Why should you ask us?

Simply because Wolverine Tube has grown with the refrigeration and air conditioning industry . . . knows its problems at first hand . . . and has developed specialized products to meet those problems.

Products, for example, like Wolverine Trufin®—the integrally finned tube that offers 150% more outside heat transfer surface area per square foot than does plain tube . . . or like Wolverine Capilator®—the plug-drawn capillary tube that gives precision control in the metering of liquids and gases. Other Wolverine products and services include commercial copper and aluminum tube in straight lengths and coils . . . complete fabrication and extrusion facilities . . . and a highly skilled Field Engineering Service to aid you in solving your tubular problems.

For the complete story just fill in the accompanying coupon and drop it in the mail . . . TODAY!

SEND
FOR THIS
FREE BOOK



Wolverine Trufin is available in Canada through the Unifin Tube Division, London, Ontario.

Please send me a copy of your new book
WOLVERINE SERVES THE REFRIGERATION INDUSTRY

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

10-58

PLANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA. SALES OFFICES IN PRINCIPAL CITIES

WOLVERINE TUBE
CALUMET & HECLA, INC.
17336 Southfield Road
Allen Park, Michigan
Manufacturers of Quality-Controlled Tubing and Extruded Aluminum Shapes

Kramer Catalog Reflects Field Studies To Determine What Customers Want

TRENTON, N. J.—Based on two years of field survey and research, a new type of general catalog has been released to its printers by Kramer Trenton Co. here, manufacturer of air conditioning and refrigeration equipment, the firm announced.

According to S. Charles Segal, Kramer's general sales manager, Kramer field men throughout the nation participated in exacting research to enable the firm to make available the most effective type of catalog.

"These men were instructed to report to the firm how catalogs were utilized by its customers and were briefed on both direct and indirect approaches to enable them to funnel back to the company the most scientific type of field survey," it was explained. "Some three months of rechecking and analysis were devoted to this project by Kramer officials and the firm's advertising agency, Pfaus-Finkle, Inc., also of this city.

"As a result of these field studies and the analysis of the reports from all parts of the U. S., it became increasingly clear that there existed a need for a new type of catalog. The survey pointed up the following:

"1. The catalog user desires all the information in one catalog, eliminating the necessity of cross-reference covering a number of catalogs.

"2. The catalog users want to be able to find the facts quickly and they were not impressed with catalogs devoting many pages to 'blown-up' sales claims.

"3. The user desires the presentation of the data in a simple, straightforward method that is easy to follow.

"4. The catalog user requested that where possible, tables be worked out to minimize calculations.

"The most difficult task in the creation of this new general catalog was the determination of the proper balance between the narrative information and photographs, tables, application, etc. The result is a catalog that contains all the necessary information to present a complete story in the shortest possible reading and reference time."

The Kramer catalog features many new, improved, and exclusive products, including the "Thermobank Compressor System," it was noted.

"To minimize the work of the application engineer, rapid selection tables for walk-in boxes are listed covering a large number of box sizes," the company

O. S. McGuffey Dies

LANSING, Mich.—O. S. McGuffey, former chief engineer at Tranter Mfg. Inc., died Sept. 11 at his home in Lansing. He was 62 years old and had retired Dec. 31, 1957.

He had been a Lansing resident 26 years. During that time he was associated as chief engineer with the Tranter firm, joining it when it was known as Kold-Hold Mfg. Co. His son, James W. McGuffey, now is a refrigeration engineer for the KOLD-HOLD Div. of Tranter.

Carrier To Make Continuous Package Freezers for Cyclomatic

SYRACUSE, N. Y.—Carrier Corp. announced entry into a new field of refrigeration with the signing of an agreement to manufacture continuous package freezers for Cyclomatic Freezing Systems, Inc., Chicago.

The announcement was made jointly by Loren Fletcher, Carrier vice president and general manager of the Allied Products Div., and Charles W. Beck, which take up to four hours, president of Cyclomatic.

The Cyclomatic freezer is designed for freezing ice cream and frozen food packages, automatically handling up to 900 gals. of ice cream or 4,000 lbs. of frozen food per hour.

The machine requires approximately 80 minutes to harden half-gallon packages and 35 minutes for pints, in contrast to freezing tunnels which take up to four hours, Beck said.

Beck stressed that the unit incorporates a new concept of freezing using vertical plates applying pressure against the package to obtain a more efficient heat transfer.

Fengolio Heads Houston Group

HOUSTON, Texas—W. F. Fenoglio has been elected president of the Air Conditioning Council of Greater Houston.

Other officers are E. O. Keith, vice president; L. R. Sexton, re-elected executive secretary; and H. E. Chisholm, secretary-treasurer.



L-O-F Glass Fibers Stockholders To Vote on Johns-Manville Merger

NEW YORK CITY—Directors of L-O-F Glass Fibers Co., Toledo, will call a special stockholders' meeting "at the earliest practicable date" to vote on a merger proposal made by Johns-Manville Corp.

Johns-Manville shareholders do not have to vote on the proposal, which was announced by Adrian R. Fisher, chairman and president of Johns-Manville, and G. P. MacNichols, Jr., change.

chairman, and R. H. Barnard, president of L-O-F Glass Fibers.

J-M proposed the merger on the basis of one share of its common stock for 2½ shares of L-O-F Glass Fibers common stock. The proposal reportedly would involve the exchange of over \$47.6 million of Johns-Manville common stock, based on current prices of the shares on the New York Stock Ex-

Conditioner Slips; Injures 3 Workers

TOLEDO—Three men were injured here when an air conditioning unit slipped from their grip as they were moving it down a stairway.

Most seriously hurt in the accident at 1503 Erie St. was Vernon Zimmerman. He was pinned against the building by the unit after it bounced to the foot of the stairway.

The men are members of Local 20572, Glass Furnace and Coke Oven Workers Union.

Mueller Offers 'Drymaster' Computer

PORT HURON, Mich.—C. R. Black, manager of the wholesaling distributing division of Mueller Brass Co., has announced the availability of a new device for quickly computing the proper "Drymaster" filter drier for use on any refrigeration system.

Made of heavy plasticized material, the pocket-sized "Slide Guide" computer is formed in the shape of the company's Drymaster filter-drier.

By setting the adjustable



SLIDE-GUIDE is demonstrated by model. One side is for Refrigerant-12, the other for Refrigerant-22.

slide to the proper end size, the correct model number Drymaster to be used along with the part number appears in a cutout window in the lower half of the guide.

In addition, the Slide Guide also gives such pertinent information as flow rating capacity, drying capacity and water capacity at both 75° and 125° liquid line temperature, total filtering area, and two dimensions—over-all length and rough-in length from the tube stops.

One side of the Slide Guide covers Refrigerant-12 and the reverse side Refrigerant-22.

A Slide Guide may be obtained without charge by writing the Sales Promotion Dept., Mueller Brass Co., Port Huron, Mich.

Admiral Names Wood National Service Mgr.

CHICAGO—Admiral Corp. announced the appointment of Willis L. Wood as national service manager.

At the same time, Carl E. Lantz, Admiral vice president-sales, made known that the company's accessories and national service and parts divisions have been combined into one department.

Lantz pointed out this consolidation will provide a three-point program: expediting the handling of accessories and parts orders; better servicing; and new economy to Admiral distributors and dealers.

In his new post, Wood will direct the over-all activities of the merged division, as well as super quality control which he has headed.

Wittichen Supply Plans Expansion

BIRMINGHAM, Ala.—Wittichen Supply Co., air conditioning and refrigeration parts and supplies firm, is planning a \$40,000 expansion.

Drexel L. Daily, vice president and general manager, said the firm has taken over the facilities housing Silver Fleet Motor Express Co. at 1615 3 Ave. S., property owned by the Wittichen estate.

The 10,000-sq. ft. building will be remodeled completely to make a modern office and warehouse.

The new facilities will provide off-street parking for employees and customers as well as add a considerable amount of additional space for increasing inventories.

Coming soon...

Ucon BRAND

refrigerants

Important News For the Refrigeration and Air Conditioning Industries...

UCON Refrigerants will be dry, pure, top quality

With UCON Refrigerants you will get quality that meets the highest industry standards. And you can choose from five grades, UCON 11-12-22-113-114.

But you'll get more. Much more.

Personal Service from technically trained representatives. The UCON Refrigerants service force is the largest in the United States.

Full Choice of Unit Sizes to meet your needs. UCON Refrigerants will be available in 10, 25, 145 lb., or ton cylinders; truck-tank or tank-car quantities.

Prompt Delivery from the largest network of distribution points serving America's refrigeration and air conditioning industries.

America's newest fluorocarbon plant will bring you a UCON Refrigerant for your air conditioning and refrigeration application. And there are new, exciting developments, soon to come. For full data write UCON Refrigerants, Union Carbide Chemicals Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, New York.

"Ucon" and "Union Carbide" are registered trade marks of Union Carbide Corporation.

These 5 UCON Brand Refrigerants will meet your refrigeration and air conditioning needs

UCON Refrigerant 11 Trichloromonofluoromethane

UCON Refrigerant 12 Dichlorodifluoromethane

UCON Refrigerant 22 Monochlorodifluoromethane

UCON Refrigerant 113 Trichlorotrifluoroethane

UCON Refrigerant 114 Dichlorotetrafluoroethane

UNION CARBIDE CHEMICALS COMPANY Division of Union Carbide Corporation



Floating Floor Allows Installation of Heating, Cooling Systems Below Floor

NEW YORK CITY—A new type of raised floor that can be laid down directly onto existing floors without requiring permanent supporting structure has been developed by Floating Floors, Inc. here.

The manufacturer sees as one use for the Floating Floor the creation of a pressurized plenum chamber that would supply air through registers and eliminate the need for ductwork and large outlets.

The Floating Floor makes it possible to install heating and cooling systems beneath the floor instead of in the ceiling area, according to Joseph W. Kelley, president. A radiant heating and cooling effect can be achieved in this way.

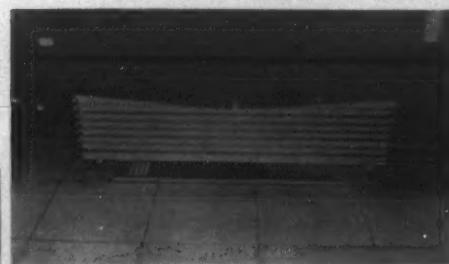
A new design principle makes it possible to lay, rearrange, or remove the floor with a degree of flexibility impossible in conventional flooring, Kelley said. It can take loads of 1,000 lbs. per sq. in. or 275 lbs. per sq. ft.

Floating Floor is laid down by assembling 36½-in. by 36½-in. modules which rest on adjustable pedestals. Each module contains four cast aluminum plates placed in a steel frame.

Whenever changes in space usage necessitate rearranging the modules and plates can be raised with a hand suction-cup lifter. With the same lifter, the floor can be picked up section by section and moved out for use in any other location.



AT THIS STAGE of assembly, cast aluminum plates are being set in place in a module frame. The plates can be covered in any material specified by the user. Since both plates and frames can be raised with a hand suction-cup lifter, a Floating Floor can be rearranged.



FLOATING FLOOR is being used here as a pressurized plenum chamber. The plates underneath this machine have been cut to install an air register. When the machine is moved elsewhere, the air register can be picked up and moved along with it.

Any location using extensive piping, ductwork, or cables can use the floor to obtain both free access subfloor space and flexible, easily rearranged or moved flooring for machinery and other equipment, the manufacturer pointed out.

When the raised floor is moved, Kelley explained, the pedestals are picked up and carried to the new location.

Each pedestal supports a corner of four different modules. Modules are merely slipped into place over the pedestals. Pedes-

tal heads are so designed that modules are self-locking when they fall into place, without need of any adjustment or tightening. Pedestals themselves rest freely on the subfloor and do not have to be bolted down.

Access to subfloor areas is obtained by lifting out either a single 18 by 18-in. aluminum plate or an entire module. Plates can be cut for installation of air registers where needed. Module frames and plates can also be cut to fit flush against walls, columns, pipes, or other structural features.

GET MORE BUSINESS FROM EVERY BUSINESS



with GENERAL ELECTRIC'S Complete Air Conditioning Line

Stores, offices, office buildings, factories—large buildings and small ones—old buildings and new ones! Every business is a prospect for General Electric Commercial and Industrial Air Conditioning because the G.E. line is complete—and flexible.

G.E. Zone-by-Zone Concept Gives You Big Sales Advantages

General Electric's Zone-by-Zone concept puts you way ahead in selling points over field-assembled systems. Planning is simplified—no need for equipment rooms—minimum need for fittings and piping—no long duct runs—maximum saving in floor space. Economies are substantial—no major alterations or serious interruption to business during installation—no shutdown of entire system for maintenance, units are individually serviced—no heavy initial outlay—financing to meet individual budgets.

Chart Your Progress With G.E.'s Blueprint For Leadership

A complete line of quality products is only the beginning! General Electric's BLUEPRINT FOR LEADERSHIP Plan gives you much more! Attractive financing plans—for you—for your customers! A course in selling—national advertising and promotion—guided local advertising and promotion—plus the selling power of the General Electric name. Every-

thing it takes to assure the leadership position for General Electric dealers. Why not plan your future with G.E.? Contact your nearest General Electric distributor—you'll find him listed in the yellow pages of your telephone directory...or mail coupon today. General Electric Company, Air Conditioning Department, Troup Highway, Tyler, Texas.

Progress Is Our Most Important Product

GENERAL ELECTRIC

General Electric Company
Air Conditioning Dept.
Troup Highway, Tyler, Texas
I am interested in signing up with General Electric so that I can benefit from G.E.'s Blueprint for Leadership Plan.

ACD 30

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____



AIR-COOLED CEILING-MOUNTED SPLIT SYSTEMS. Remote condensing unit may be placed anywhere, indoors or outdoors. Capacities 3 to 10 tons.



SELF-CONTAINED CEILING-MOUNTED UNITS—Air- and water-cooled 3 to 7½ tons.



FLOOR-MOUNTED UNITS—Water-cooled, self-contained 3 to 30 tons—air-cooled split systems 10 to 20 tons.

Heating coils may be added. All units covered by General Electric's 5-year warranty on sealed motor-compressor.

Gas Cooling Gets Top Billing at AGA Convention

PORTLAND, Ore.—Air conditioning got top billing at the Pacific Coast Gas Association convention here.

Retiring PCGA President Charles H. Gueffroy, president of Portland's Northwest Natural Gas Co., gave his annual report to the convention and told conferees the future of gas air conditioning is unlimited.

Gueffroy said that even in the southwest part of the Pacific coast area where the industry has made greatest penetration, the market for gas cooling is almost untouched.

He also said the industry has a potential air conditioning market in the Pacific northwest if gas heating is properly developed first.

American Gas Association President-nominee J. Theodore Wolfe, president of Baltimore Gas & Electric Co., said AGA intends to push its air conditioning campaign even further in the year ahead.

Air conditioning is project number one in PCGA's sales and advertising section as revealed by its annual report. Sales and advertising meetings in recent months have featured air conditioning in industrial sales, in plans for reaching homemakers, and in the comfort sales approach.

'Pelaspan 18' Said To Be Self-Extinguishing

MIDLAND, Mich.—Expandable polystyrene bead with self-extinguishing characteristics has been developed and produced by The Dow Chemical Co.

Trade-marked "Pelaspan 18," the new product is similar to "Pelaspan 8," with self-extinguishing materials incorporated in the bead. Pelaspan 18 is being sold commercially in temporarily limited quantities.

Dow sells Pelaspan 18 as a raw material to plastic molders, processors, and manufacturers for applications requiring self-extinguishing properties in the general molding, air conditioning, refrigeration, appliance, and panel construction fields.

McDaniel Named

Hotpoint Sets Up New Sales Dept., Adopts Full Line Marketing Plan

CHICAGO—Hotpoint Co. has created a new division-wide sales department, expanded its field sales force, and adopted a new full line marketing plan, the firm announced.

Named to head the new sales department as general sales manager is John F. McDaniel, formerly general manager of the sales and distribution department. He will be responsible for sales of all products to distribution and coordination of merchandising, advertising, promotion, product service, and training plans.

To expand his field sales force, McDaniel created five regions and added 13 new zone sales representatives who'll work with distribution.

Newly-created sales regions and their managers include: eastern region, J. S. Hicok; mid-western, D. Edward Weston, Jr.; southeastern, F. B. Williams; southwestern, D. F. Johnston; and western, L. E. Ankerson.

Hicok, Weston, and Williams have held similar regional jobs prior to their new assignments. Johnston is formerly manager, TV and air conditioning sales, and Ankerson is formerly manager, special markets.

The new regional sales managers will announce their own zone sales representatives within a few weeks.

McDaniel's new sales department is revised in all but product service section which remains under the management of W. G. McNeal.

Advertising and merchandising section under Lee J. DiAngelo as manager, is now charged with the function of distributor management and product sales training. John M. Coppinger has been appointed as manager of that function. All other sub-sections, product publicity, advertising, sales promotion, etc., remain unchanged.

To assist his field sales force in developing markets and realizing sales potentials and goals, McDaniel has created a market development section and appointed C. C. Gramer as manager, market development. Gramer was formerly manager, distribution planning, a function now integrated into the market development section.

Gramer has appointed the following personnel to newly-created positions: V. P. Owens, manager, special markets; G. W. Westfall, manager, market and sales research; J. A. Carlson, manager, TV sales planning; C. N. Krewson, manager, distributor structure and control; and J. G. McCay, manager, order service.

In explaining how the new sales department would operate with the company's three product departments—home laundry, kitchen appliance, and refrigeration, McDaniel gave the

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

**3 Firms Flying 5,000
To Jamaica, Nassau**

following example:

The product departments will initiate products, plans, and promotions for implementation by the sales department, who will in turn initiate a coordinated marketing plan or strategy. The new integrated strategy will then be presented to distribution through the field sales organization, who will then work with dealers to help them formulate new marketing plans for merchandising and selling.

"This," says McDaniel, "presents dealers with a plan for selling Hotpoint appliances but allows flexibility to meet local competitive conditions, and puts the decision at the point of sales."

NEW YORK CITY—Nearly 5,000 U. S. salesmen and their wives are flying to Jamaica and to Nassau for expense-paid vacations, Pan American World Airways announced.

The vacationing passengers are distributors, dealers, and salesmen—winners of one-week trips as awards in sales contests by Fedders-Quigan Corp., York Corp., and Hotpoint Co.

An airlift carrying 3,000 Fedders-Quigan employees and their wives to Montego Bay, Jamaica, began Sept. 18 and will continue about 10 weeks. A Hotpoint airlift of 450 vacationers to Nassau began Sept. 21, and a York airlift of 1,200 to Montego Bay started the next day.

Power Conference Set for Chicago Mar. 31-April 2

CHICAGO—The 21st American Power Conference, sponsored annually by Illinois Institute of Technology in cooperation with a group of technical societies and educational institutions, will be held on March 31 and April 1-2 at the Hotel Sherman, Chicago.

Among cooperating societies are the American Society of Heating & Air-Conditioning Engineers and the American Society of Mechanical Engineers.

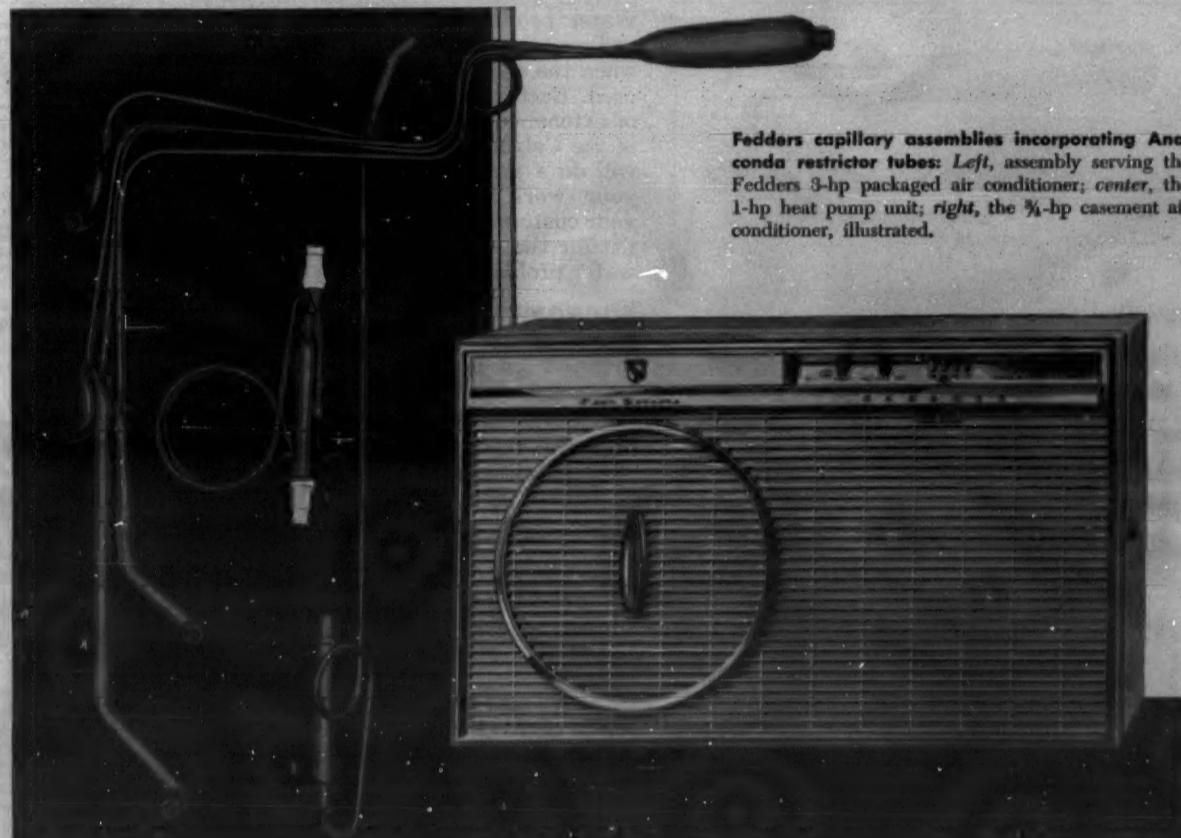
Inquiries concerning the conference should be sent to Conference Director R. A. Budenholzer, Mechanical Engineering Dept., Illinois Institute of Technology, 3300 Federal St., Chicago 16.

EI Plans Program To Boost Home Use Of Electricity

NEW YORK CITY—A national promotional program aimed at increasing the home use of electricity is planned for early next year, it was announced by J. E. Corette, president of the Edison Electric Institute, following approval of the new program by the EEI board of directors.

The new program will be financed on a voluntary basis by institute member companies, Corette said. Scheduled to start next February, during National Electrical Week, the program will aggressively promote all-electric living including the Medallion Home, it was stated.

Details of the new EEI program are being developed.



Fedders capillary assemblies incorporating Anaconda restrictor tubes: Left, assembly serving the Fedders 3-hp packaged air conditioner; center, the 1-hp heat pump unit; right, the 1/4-hp casement air conditioner, illustrated.

**"We use Anaconda Restrictor Tube 100%"
—Fedders-Quigan Corp.**

As one of the largest producers of room air conditioners, Fedders-Quigan Corporation, Maspeth, Long Island, uses miles of restrictor tube a year. Since 1954, Fedders has been using only Anaconda Restrictor Tube.

Fedders looks on the restrictor tube as the jugular vein of the air conditioner. The faithful performance of the entire unit depends largely on the tube's uniformity and quality. Fedders looks for these qualities in restrictor tubes:

1. Uniform performance within extremely close air-flow limits, made possible by consistently uniform inside diameter and a smooth, round, clean bore.
2. Easy bending, without fractures.

Fedders uses restrictor tube in four inside diameters in six lengths, reordering from Master Sample Reference Tubes. Duplicate Master Reference Samples kept at French Small Tube Division, The American Brass Company, insure that

all shipments have the air-flow limits originally established. Consistently high quality. All Anaconda Restrictor Tubes are plug-drawn to finish. Every length is chamfered at both ends, inside and out. Each tube is thoroughly washed and dried, given a final air-flow test, carefully bundled, with ends of each bundle wrapped in paper. Anaconda Custom-Made Restrictor Tubes are made in both copper and aluminum, in nominal inside diameters from .025 to .090 inches.

Write for information or free Air-Flow Slide Rule Calculator. Address: French Small Tube Division, The American Brass Company, Box 1081, Waterbury 20, Conn.

**ANACONDA®
RESTRICTOR TUBES**

Made by French Small Tube Division of The American Brass Company

ANACONDA PRODUCTS FOR THE REFRIGERATION AND AIR-CONDITIONING INDUSTRY



Service Firm Offers Flat Rate To Dealers For Installing Residential Cooling, Heating

Cooling Work Dovetails with Oil Heat Service

By C. Dale Mericle

GARY, Ind.—Years after first its name implies, is still heating studying air conditioning and service, but the air conditioning refrigeration but winding up in end of it is growing. the heating business because other jobs were scarce, Don Blake of Blake Heating Service here is back into air conditioning with a somewhat unusual operation.

The firm installs and services residential air conditioning equipment on a wholesale basis for 16 Gary dealers, offering them a basic price which simplifies cost estimating for the dealers and their salesmen. Main business of the firm, as Blake indicates.

The 16 dealers (including five building contractors) who employ the firm's services for air conditioning installation are offered a set price for installing remote air-cooled residential units.

"There are so few water-cooled jobs being installed for homes today that we haven't bothered to arrive at any definite price for them," Blake explains.

Installation price on air-cooled units quoted by Blake to dealers varies slightly with size of refrigerant lines and length of run.

Basic price starts with a tub (Continued on next page)

Water problems in refrigeration and air conditioning systems stop when the right Calgon product is used. Each product is the result of extensive research and testing in the Calgon Laboratories. Each will do a job for you — making your work easier and keeping your customers happy. Check this list for the easy solution to your water problems:

MICROMET* PLATES — provide the Micromet treatment recommended by leading equipment manufacturers for over 10 years. One charge provides season-long scale and corrosion protection.

CALGON* SCALE REMOVER — makes it easy to clean a system quickly and safely.

CALGON ECONOMY POWDERED ACID — is specially formulated for safe, low-cost cleaning of cooling water systems.

BANOX* — quickly forms a film on metal surfaces which helps prevent corrosion when used at spring start-up, after acid cleaning, and at shutdown.

CALGON ALGAECIDE — positive action kills algae and slime.

CALGON ICE MACHINE TREATMENT — a phosphate with controlled rate of solubility for the prevention of scale deposits in ice machines.

CALGON ICE MACHINE CLEANER — available in either liquid or powdered form for removing scale from ice machines quickly, safely and efficiently.

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CORROSION INHIBITOR CS — protects closed water systems against corrosion.

CALGON WATERLESS HAND CLEANER — removes grease, dirt, paint, pipe dope quickly and easily.

WRITE for free, illustrated booklet on Cooling Water Treatment. *T.M. Reg. U.S. Pat. Off.

CALGON COMPANY

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HAGAN BUILDING, PITTSBURGH 30, PENNSYLVANIA
DIVISIONS: CALGON COMPANY, HALL LABORATORIES
IN CANADA: HAGAN CORPORATION (CANADA) LIMITED, TORONTO

COMPLETE CLEANING AND CHECK-UP WORK SHEET INVOICE #	
HOT AIR SYSTEM:	
<input type="checkbox"/>	CLEAN AND ADJUST THERMOSTAT DIFFERENTIAL _____ DEG.
<input type="checkbox"/>	CLEAN BLOWER
<input type="checkbox"/>	CLEAN BLOWER COMPARTMENT
<input type="checkbox"/>	CHECK BELT ALIGNMENT
<input type="checkbox"/>	TIGHTEN SET SCREW
<input type="checkbox"/>	OIL BLOWER AND MOTOR
<input type="checkbox"/>	CLEAN OR REPLACE AIR FILTERS
<input type="checkbox"/>	CHECK FOR EXCESS BLOWER NOISE
<input type="checkbox"/>	CLEAN HUMIDIFIER PAN
<input type="checkbox"/>	CLEAN HUMIDIFIER VALVE
<input type="checkbox"/>	CHECK HUMIDIFIER WATER LEVEL
<input type="checkbox"/>	CLEAN OR REPLACE HUMID. PLATES
<input type="checkbox"/>	CLEAN FURNACE-VACUUM YES - NO
<input type="checkbox"/>	CLEAN SMOKE PIPE
<input type="checkbox"/>	CHECK SMOKE PIPE FOR HOLES IF IT NEEDS REPLACING, GET DIA. ____ LS. ____ CELLS. ____
<input type="checkbox"/>	CHECK OIL FILTER CARTRIDGE
<input type="checkbox"/>	CHECK TANK GAUGE-WORKING FREELY
<input type="checkbox"/>	CHECK TANK OUTSIDE-RUST, LEAKS
BOILERS:	
<input type="checkbox"/>	CLEAN AND ADJUST THERMOSTAT DIFFERENTIAL _____ DEG.
<input type="checkbox"/>	CLEAN BOILER-VACUUM YES - NO
<input type="checkbox"/>	CHECK BOILER FOR RUST
<input type="checkbox"/>	CLEAN SMOKE PIPE
<input type="checkbox"/>	CHECK SMOKE PIPE FOR HOLES IF IT NEEDS REPLACING, GET DIA. ____ LS. ____ CELLS. ____
<input type="checkbox"/>	CHECK BOILER WATER FOR DIRT NEC. TO FLUSH YES - NO
<input type="checkbox"/>	TEST PRESSURE RELIEF VALVE
HOT WATER:	
<input type="checkbox"/>	TEST WATER FEEDER
<input type="checkbox"/>	DRAIN EXPANSION TANK
<input type="checkbox"/>	CHECK FLOW CONTROL VALVES
<input type="checkbox"/>	CLEAN BOOSTER PUMP
<input type="checkbox"/>	TIGHTEN SET SCREW ON PUMP
<input type="checkbox"/>	CHECK PUMP MOTOR BUSHINGS
<input type="checkbox"/>	OIL PUMP AND MOTOR
<input type="checkbox"/>	TEST REVERSE ACTION AQUASTAT SET: HI. ____ LOW. ____
STEAM:	
<input type="checkbox"/>	CHECK LOW WATER CUT-OFF
<input type="checkbox"/>	TEST LOW WATER CUT-OFF SAFETY
<input type="checkbox"/>	CHECK WATER LEVEL
<input type="checkbox"/>	TEST & ADJUST PRESSURE CONTROL SETTING ____ LBS.
VAPORIZING (POT-TYPE) UNITS:	
<input type="checkbox"/>	CLEAN POT
<input type="checkbox"/>	CHECK POT FOR CRACKS
<input type="checkbox"/>	CHECK PILOT WELL
<input type="checkbox"/>	CHECK UPPER AND LOWER BAFFLES
<input type="checkbox"/>	CLEAN OIL VALVE
<input type="checkbox"/>	CLEAN OIL VALVE SCREEN
<input type="checkbox"/>	CHECK LOW FIRE ____ CC PER MIN
<input type="checkbox"/>	CHECK HI FIRE ____ CC PER MIN
<input type="checkbox"/>	CLEAN BOOSTER FAN
<input type="checkbox"/>	OIL BOOSTER FAN AND MOTOR
<input type="checkbox"/>	CHECK ALL ELECT. CONNECTIONS
<input type="checkbox"/>	SET-ADJUST HI AND LOW FIRE
<input type="checkbox"/>	ADJUST DRAFT OVER FIRE ____ IN.
<input type="checkbox"/>	CHECK LIMIT CONT-SETTING
<input type="checkbox"/>	CHECK FAN CONTROL
<input type="checkbox"/>	SETTING HI. ____ LOW. ____
<input type="checkbox"/>	CHECK ALL FITTINGS FOR LEAKS
<input type="checkbox"/>	CLEAN UP AROUND BURNER

FORM used by Blake Heating Service for "clean and check" of oil-fired domestic heating systems not only lists all operations to be done by serviceman but also the order in which they're to be done. Serviceman completes all operations on furnace or boiler before starting on burner itself.

NOW . . FROM REMCO MOLECULAR SIEVE FILTER-DRIERS with DEPTH FILTRATION



Utilizing advanced design Molecular Sieve cartridges, these new Remco Filter-Driers combine unequalled drying efficiency, effective acid removal, generous flow capacity and depth filtration.

The massive depth filter completely removes all scale, sludge, carbon and other particles as small as 100 microns. Molecular Sieves adsorb and retain large quantities of moisture even at refrigerant temperatures of 140°F, and keep moisture concentrations below 15 ppm. Acids are reduced far below dangerous corrosion limits.

Compact in size, the filter-driers are U/L Approved and may be used for Refrigerants 12 or 22, Carrene or methyl chloride. Working pressure is 500 psi; minimum bursting pressure, 2500 psi.

REPLACEABLE CARTRIDGE TYPE units use an "O" ring for a positive, leakproof flange seal. From 3 to 40 tons, with $\frac{1}{2}$ " thru $1\frac{1}{2}$ " sweat connections.

SEALED TYPE filter-driers are available in 1 to 12 tons, with $\frac{1}{4}$ " thru $\frac{1}{2}$ " flare and $\frac{1}{2}$ " thru $\frac{3}{4}$ " sweat connections.

"T" FITTING TYPE in 2 to 6 tons, are readily adaptable to systems using conventional "T" driers.

Remco Molecular Sieve Filter-Driers are available at leading wholesalers. Ask your wholesaler for more information, or write for Bulletin MS-1. Remco, Inc., Zelienople, Pa.

REMCO

MANUFACTURERS OF ADVANCED REFRIGERATION PRODUCTS

Filter-Driers • Liquid Indicators • Receiver-Driers • Check Valves • Safety Devices • Frost-Tite Flare Nuts

Installing Residential Systems--

(Continued from preceding page) ing run of 28 ft., which is usually the minimum length of run encountered, according to Blake. This generally figures out to be 20 ft. of horizontal run and an 8-ft. vertical run, but Blake's basic price permits any combination of horizontal and vertical runs provided the total doesn't exceed 28 ft.

Where the tubing run is longer than 28 ft., there is a slight additional charge per foot of run: \$1.50 per foot for $\frac{3}{8}$ -in. liquid line and $\frac{1}{4}$ -in. suction line; \$1.70/ft. for $\frac{3}{8}$ -in. liquid and $\frac{1}{4}$ -in. suction; \$1.90 for $\frac{1}{2}$ -in. liquid and $\frac{1}{8}$ -in. suction; \$2.30 for $\frac{1}{2}$ -in. liquid and $\frac{1}{4}$ -in. suction. The price per foot includes both liquid and suction lines.

All prices include a condensate drain up to 10 ft. in length and insulating of suction line within the building.

"Big advantage of this offer," Blake explains, "is that the cost of installing the equipment can be readily determined by the salesman, who merely has to measure the distance from the evaporator section location to the remote unit to arrive at his cost."

Even if the salesman made a slight error in this measurement, the difference in cost would be negligible.

A small additional charge is made if a vacuum pump is required for evacuating the system, and likewise, if refrigerant is added on the original start-up, there is a charge for both refrigerant used and labor. If the contractor has taken out a one-year service policy on the equipment, however, there is no charge for labor involved in adding refrigerant.

Firm Does No Sheet Metal Work

All the above arrangements apply only to the actual air conditioning equipment installation. Blake does no sheet metal work.

Similar arrangements are offered on heating installations, for the company sells no equipment itself. Actually, for the past few years Blake Heating Service has operated as a division of Dalton Oil Co., Inc., a leading distributor of fuel oil in the Gary area.

The great bulk of Blake's activities are in the field of heating service, primarily domestic type oil burners.

"We do service and install gas equipment, too, but we don't actively solicit gas business," Blake explains.

For service and installation on heating and air conditioning the firm maintains a fleet of nine trucks and a crew of nine servicemen plus a stockman who helps on service.

Four of the service crew are fully qualified to handle the complete installation of air conditioning, including running of lines, evacuating, etc., and the others can serve as helpers, according to Blake.

Eight of the service trucks are I-H Metro walk-in models and each carries \$1,700 worth of parts and \$508 worth of tools, instruments, and gauges. The men supply their own hand tools.

list of parts used on a hook in front of a bin in the stockroom. There's a separate bin for each serviceman. During the day the stockman puts the replacement items in each bin, according to the servicemen's lists. The following morning the servicemen pick up the parts and put them in their trucks.

"Too many of the so-called experienced servicemen have never used gauges and instruments and seem reluctant to learn how," he explains. "We find it much easier to teach an inexperienced man how to do the job right."

New men usually start out in the stockroom where one of the main jobs is to replace the parts used by servicemen out of the truck inventories.

This is handled in a rather simple but controlled manner. At the end of the day, or the first thing the following morning, each serviceman places a

list of parts used on a hook in front of a bin in the stockroom. There's a separate bin for each serviceman. During the day the stockman puts the replacement items in each bin, according to the servicemen's lists. The following morning the servicemen pick up the parts and put them in their trucks.

2-Way Radio Used In All Trucks

Elimination of all possible time-wasting procedures is essential for the successful operation of any service business, of course, so Blake is continually striving towards perfection on this score.

One big time-saver is the use

of two-way radio for dispatching. All nine service trucks are so equipped, as in the station wagon used by Don Blake in his daily rounds. Blake, incidentally, carries a fair number of tools in his station wagon just in case he gets called in on a "stickler" or emergency.

Another time-saver is a heavy 5 by 7-in. envelope in which is placed a copy of the invoice giving a fairly detailed record of the work done on each service call, the envelope being attached to the equipment. Thus, in the event of call-backs or future service calls, the serviceman can check the copy of the latest invoice to determine what previously had been done on this particular job.

Although this envelope carries the names of Blake and Dalton, the firm's telephone number is purposely omitted.

"Otherwise," Blake explains, "most people would be likely to pull the envelope off the equip-

ment and take it to the phone when they call us, and then the envelope and invoice would probably be soon lost."

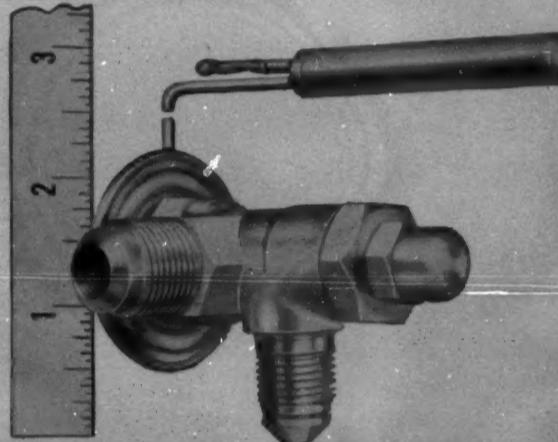
Instead, a separate heavy tag with the firm's name and phone number is attached to the equipment. This is not only a reminder to the owner of whom to call for service, but friends and neighbors who see several of these cards in various homes will likely remember the Blake name when they need service, or so Blake hopes.

Records of previous service calls are also maintained on a 4 by 6-in. card (one for each customer) which is used for dispatching servicemen and recording service calls. The card has spaces for noting the usual information about customer and equipment plus spaces for detailed notations for as many as seven service calls.

On the front of the card the dispatcher notes when the cus-

(Continued on next page)

Inch for Inch DETROIT'S NEW expansion valves give you the most...



COMPACT CAPACITY



The new No. 718 Expansion Valve. Also available with external equalizer.



The No. 717 is a factory set valve of the same basic design as the No. 718 Expansion Valve. The No. 717 superheat setting is easily adjusted in the field before installation, with an Allen wrench through the inlet connection, to allow superheat settings other than standard. The adjusting screw is not sealed or soldered.

An entirely different concept in expansion valves—the completely new No. 717 and No. 718. Each of these valves is designed with a minimum of moving parts, to provide a more compact unit with greater capacity.

These new valves offer:

- The Smallest Valves Per Ton Of Refrigeration

Broader use in more limited spaces.

- Close Superheat Control

Minimizes surge for maximum valve operating efficiency.

- Broad Range Of Application

$\frac{1}{2}$ to 3 tons R-12
 $\frac{1}{2}$ to 5 tons R-22
L, C and Z charges available.

- Easier To Service

Entire valve easily disassembled for inspection and cleaning.

- Connection Sizes

$\frac{1}{4}$ and $\frac{3}{8}$ S.A.E. Inlet with strainer.
 $\frac{1}{2}$ S.A.E. Outlet.

For complete information see your DETROIT Wholesaler.

Detroit Controls Division of American-Standard, 5900 Trumbull Avenue, Detroit 8, Michigan.

Canadian Representatives: R. & E. REFRIGERATION & HEATING SPECIALTIES LTD., Montreal, Toronto, Winnipeg

Export Distributors (except Canada) Melior, Armstrong, Dossau Co., Ridgefield, N. J.



AMERICAN-STANDARD
DETROIT CONTROLS DIVISION

Installing Residential Systems--

(Continued from preceding page) and service work done.

Customer called in, promised time of service, kind of service required, which serviceman was given the call, time of his arrival, and time job was completed.

Back of the card permits noting date of calls, name of serviceman, parts used, cost of parts and labor, and special comments as required.

As far as possible, to speed the dispatching procedure and service policies on oil burners, hold paperwork to minimum which are offered both to dealers to cover their first-year records, code numbers are employed to indicate parts used following the warranty period.

The plan provides for (1) steam traps, humidifiers, etc.), pass this inspection, the customer who wants the service policy will be charged for the cost of necessary repairs plus another \$10.75 (current rate) for the policy.

Clean, Check Procedure Is a Detailed One

The clean and check procedure employed by Blake Heating Service is a detailed one, and is carefully spelled out on a work sheet which all new servicemen are required to follow explicitly. Even an experienced man, if his work appears to be below par for some reason or other, will occasionally be required to fill in the work sheet in detail.

The work sheet not only shows exactly what is to be done on a clean and check job but also the order in which the work is to be done. The furnace or boiler is worked on first, for example, with the very first step being to clean and adjust the thermostat and note its differential setting. Final but important step is: "clean up around burner."

Close attention to all these details helps keep no-charge "call-backs"—the bane of service organizations—at a minimum. Out of more than 7,000 service calls last year, only 6.85% were call-backs, according to Blake.

Other and possibly more important things are also done to minimize call-backs, however.

"Before we go out on a call-back, we ask the customer if he has checked the fuse, oil supply, and reset button, warning him that if one of these three items is the trouble, he will be charged for the call," Blake says.

Bonus Plan Helps To Minimize Call-Backs

The servicemen themselves are given a positive incentive to eliminate call-backs through a bonus plan, Blake also pointed out.

Under this plan the company puts aside in a special fund 15 cents for every hour each serviceman works, the money being (Continued on next page)



Solve your motor problems with Century Electric's complete fractional-horsepower line

You can make your job easier with Century Electric's complete line of fractional-horsepower motors. Here's how:

Easy ordering—You save time because you get answers to all motor problems from one source. This means you don't have to shop around for the motor you need. You name it—capacitor, jet pump, unit heater, oil burner, brake, gear—any one you want, and in all types of enclosures too.

Fast shipments—From Century Electric's complete stock you can get a motor for any standard application. In addition, motors are packed in sturdy boxes so if you reship you know they'll arrive in good condition.

Application know-how—You want to be sure you have the right motor for the job. And if you need expert help, you can get it from your nearest Century Electric sales engineer. He knows motors inside and out because he sells, applies and thinks motors day after day.

This is why you get more than just a motor from Century Electric. You get a quality product, fast answers and engineering application know-how on motors up to 400 hp—all from one source.

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**NEW LOW-COST ANSWER TO
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THE ONLY COMPLETE UNIT ON THE MARKET

INVALUABLE FOR CLEANING ALL TYPES OF CONDENSERS

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FEATURES INCLUDE
ACID PROOF TANK • PUMP • INLET
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SAVES TIME and MONEY
SATISFACTION GUARANTEED

Write for Prism and Bulletin AC-108C-2

HASTINGS AIR CONTROL, INC. Danaher St. Louis

(Continued from preceding page) credited to each man's account. For every no-charge call-back, though, \$1 is deducted from the offender's account. The accumulated funds are paid to the men once a year. Obviously, the fewer no-charge call-backs against an individual serviceman, the larger his bonus will be.

Some of the firm's servicemen have received well over \$300 in bonus under this plan.

Sales Leads Can Boost Income

(Servicemen can also add to their income by commissions on leads they supply which develop into sales. Blake sells no equipment, so such leads are passed along to the dealers the firm does work for in rotation, depending also on the proportion of business these dealers do with Blake. An exception is made, however, if the existing equipment due for replacement is the same make handled by one of Blake's dealer-customers. That lead goes first to that particular dealer.)

There's still another scheme employed by Blake to keep close tab on the servicemen's work, help eliminate call-backs, and in general give a quick picture of the type of complaint being encountered.

Pegboard Keeps Tabs On Man's Performance

A large pegboard attached to the wall behind Blake's desk provides spaces for each serviceman's name and a fairly detailed breakdown of the type of call-backs each man was involved in. Colored golf tees are used to designate the number of service calls and call-backs for each man.

Across the top of the board the following categories are listed: controls, motors, pumps, transformers, oil leak, fumes, ignition, smoky fire, noise, not enough heat, miscellaneous, and total number of service calls.

In the latter column all the service calls for each man are indicated by the colored golf tees. White tees represent one

call; yellow tees, five calls; red tees, 10 calls.

When there is a call-back, however, this is noted on the board by placing another tee opposite the serviceman's name and under the appropriate column. The board is kept up to date every morning by a clerk.

The board can thus serve a variety of purposes, according to Blake.

"If one serviceman seems to be having an unusual number of call-backs because of leaks, say, it rapidly becomes apparent that he may need some checking on this score," Blake explains, "or if he seems to be having trouble on controls, we can get at this problem."

Blake does not simply assume, however, that the serviceman is at fault. The call-backs are analyzed from the service records and by talking with the serviceman. It may develop that the call-backs were due to a

shortage of certain parts and in service calls.

"I believe that 40% of all oil burner service calls are caused by insufficient fresh air for combustion, especially in homes built in the past five or six years," Blake contends.

Houses today are more tightly constructed and usually equipped with tight-fitting storm windows and doors, all of which combine to keep out cold air in winter, but at the same time they reduce the amount of oxygen available for combustion at the oil burner, he points out.

The immediate result is poor combustion, which eventually leads to some kind of service.

So, starting last October, Blake has had his servicemen making "fresh air surveys" on every call. On the survey form is listed the customer's name, address, and phone number, oil rate or B.t.u. rate of the burner. The form also shows the

size of run for a fresh air intake duct, outside and inside opening measurements, number of elbows, number of hours labor required, and cost.

Blake hopes that by next spring he'll have enough facts to fully convince both himself and his customers that a fresh air supply duct would be worthwhile, and that he'll be able to quote them an installed price over the phone.

Offers Site Signs for Arkla Air Conditioning

LITTLE ROCK, Ark.—Site signs for Arkla-Servel air conditioning installations are now being offered by Arkla Air Conditioning Corp. to installers of its equipment.

The signs are printed on both sides of weatherproofed cardboard 28 in. high and 44 in. wide in blue and yellow.



Regardless of the installation or size... whether it's commercial, air conditioning or ammonia, there's a perfect combination of Sporlan Catch-Alls, See-Alls, Solenoid Valves, Thermostatic Expansion Valves, Refrigerant Distributors and Level-Master Controls that is scientifically engineered to give you a hook-up with right down the line peak performance every time!

Ask your Sporlan wholesaler for Catalog 58, today.

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EXPORT DEPT. AD. AURIEMA, INC., 85 BROAD ST., NEW YORK 4, N.Y.

Export Facilities

Sees Brighter Future

India Has Foreign Exchange Problem

BOMBAY, India—Though the immediate future for importing air conditioning and refrigeration products into India is not bright, Ahmed Fazelbhoy hopes that in two or three years, maybe, more foreign exchange will be available to permit imports on a better scale than at present.

Fazelbhoy, managing director of Ahmed A. Fazelbhoy (Private) Ltd., sales representative in India for Tecumseh, du Pont, Dunham-Bush, Ranco, and Mueller Brass, cites two reasons for a brighter future.

"This anticipation," he declared, "is based on the national drive to increase our export trade in all directions and thus earn a greater volume of greatly needed foreign exchange."

"Also the government is promoting and encouraging indigenous diverse industries which will require refrigeration and air conditioning equipment for better processing and production methods."

"No doubt these industries would be permitted to import refrigeration and air conditioning equipment, components, and supplies for industrial applications."

"There is thus a future for foreign manufacturers to supply such equipment or material which is not available from local sources."

"There will be scope for more business with this country accordingly."

If it were not for heavily restricted import licenses on account of shortage of foreign

exchange, Fazelbhoy asserted, "the prospect for business in this country would be excellent due to our climatic conditions, the expanding economy, and large population which is now becoming very conscious of the benefits and advantages of the various refrigeration and air conditioning applications available today."

Admiral Hosts Foreign Marketing Consultants

CHICAGO—Marketing consultants from several foreign countries were the guests of Admiral Corp. recently at a seminar on marketing of major appliances.

Admiral marketing executives formed a panel to discuss procedures they have proved to be successful in marketing air conditioners, refrigerators, freezers, and other products, according to the firm.



TWO fan coil rooms located on roof of South Camp Drake theater in Japan are shown in this exterior shot of the building where air conditioning was recently added.



MACHINE room shows two Airtemp chiller units which supply cold water for the cooling coils.

Poses Problem

Ducts In Theater In Japan Too Small for Air Conditioning

CAMP DRAKE, Japan—Adding cooling to the original heating system in the South Camp Drake theater in Saitama prefecture, Japan, posed a problem for Kondoh Industries, Ltd. of Tokyo, which engineered the installation.

Existing ductwork in the forced air heating system was not large enough for cooling, it was found. Additional ductwork had to be added. So, two cooling coil chambers were constructed on the roof, one for the new duct and the other for existing heating duct.

New duct system has three supply air grilles, all located at the rear end of the theater near the ceiling. They throw air toward the front of the theater.

Existing duct system has 16 supply air grilles distributed around the auditorium.

Two model W-1422, 100-hp. Airtemp water chillers are located in a shed constructed adjacent to the theater building. They supply chilled water to the cooling coils. Two locally built cooling towers supply condenser water to these two water chillers.

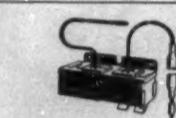
Demand Rising for Refrigeration In Denmark

COPENHAGEN, Denmark—There is a constantly increasing demand for home refrigerators and for refrigerated display counters and freezers for self-service shops and supermarkets in Denmark, reports Helweg Jorgensen, refrigeration and appliance distributor here.

However, import restrictions make it impossible to import American goods, he added.

His firm distributes Frigidaire commercial and domestic refrigerators in Copenhagen and Sealand, obtaining them through General Motors International here and in Germany and England.

The firm distributes Bendix appliances made in England throughout Denmark.

**see RANCO for controls, valves, relays**

A variety of performance-tested products with applications in:

Air Conditioning: automotive units; commercial and residential heat pumps, cooling and heating room, window, wall built-in and console units.

Automotive: air conditioning and heater modulating controls.

Clothes Dryers: cycling controls and sequence timers.

Commercial Refrigeration: attic fans, wet and dry beverage coolers, beverage dispensers, blood bank cabinets, food display cases, dough retarder cabinets, dairy and beverage wall cases, egg coolers, film developer units, florists' walk-in boxes, fur storage vaults, ice cream freezers, ice makers, milk coolers, portable locker plants, reach-in refrigerators, soda fountains, truck refrigeration, water coolers, wine chillers.

Household Refrigeration: domestic refrigerators and combination refrigerator-freezers, trailer refrigerators, home freezers, refrigerated bars.

Relays: fractional horsepower motor protection and starting.
See your Ranco wholesaler for the proper control for your specific application.

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More Than 100,000,000 Ranco Controls Proven In Use



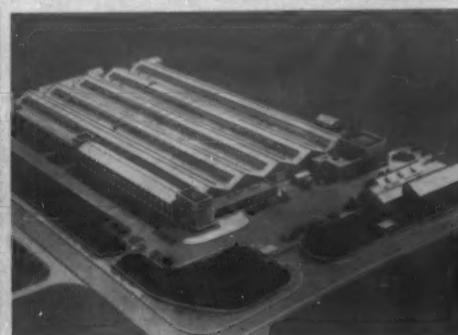
Columbus, Ohio



Delaware, Ohio



Plain City, Ohio



Tannochside, Uddington, Scotland

Not shown: Plants at Melbourne, Australia; Olgiate Comasco, Italy

Report on Education

Another article in a series dealing with all levels of education and training in the air conditioning and refrigeration industry.

By Frank J. Versagi, Technical Editor

6. Apprentice Training

While all the levels of education so far discussed—college, technical institute, trade, and correspondence—can be obtained while employed, they are for the most part pre-employment education. That is, the courses are primarily designed to prepare a man for some position in the industry whether or not he has had extensive experience.

What happens to the man who is already in the field? Where does he get the education he needs if he is to continue to grow into a better engineer, serviceman, dealer, or salesman?

One of the first things which comes to mind is the manufacturer's school, and its effectiveness will be discussed later.

For now, however, we should look at the apprentice situation.

As was mentioned earlier, most trade level schools do not make it obvious that completion of their training programs is not, of itself, an open door to employment in the field. We saw that part of the reason for this is the fact that many employers are skeptical of the training qualities of schools with which they are not personally familiar.

Equally important is the union-contractor situation. In most metropolitan areas, refrigeration servicemen are members of the United Association (UA). Within the association in each locality there may or may not be separate locals of plumbers and pipefitters.

To get any significant employment as a serviceman in these areas, it is necessary to serve an apprenticeship of four to five years before becoming a journeyman. Apprenticeship consists of active employment for a contractor and minimum required related educational training.

Joint apprenticeship committees in several areas have chosen certain schools whose refrigeration courses are acceptable for this related training. In fact, where more aggressive committees are operating, they are active in establishing the curriculum and finding the teachers for such courses.

The point in all this is that a man who intends to enter refrigeration service by working for someone else will have to serve this apprenticeship and take this related training. It is important, therefore, that he determine whether any trade or correspondence courses he takes will be accepted as related training by the local apprenticeship committee, or whether he will have to take the industry sponsored course—in which case it might be unnecessary to spend time and money on a trade or correspondence course.

In those areas where jurisdictional disputes or other problems have prevented the establishment of a formal apprenticeship program, it would be wise for the would-be apprentice to check with local labor and in-

dustry leaders to determine the best course of action in entering the field.

While this advice may seem unnecessary to some readers, it is important to remember that a great many of the people attracted to trade schools and trade level correspondence schools are unfamiliar with broader business and economic principles. Even though school contracts spell out limitations of what is offered, many of these people go into a course with a very real feeling that once the

course is finished, somehow they will automatically have a job. While individual state and local labor-contractor negotiations have turned out several types of formal apprenticeship programs, there is no one rigid pattern applicable to all.

In fact, the Canadian Refrigeration Manufacturers Association tried a similar approach with a trade school in Toronto; that is, related apprenticeship training. But it was a solid nine-month training period during which the student had to pay his own way. Chiefly for this reason, and because men not in the immediate metropolitan area were not benefiting, CRMA dropped its program and tied in with the formal Apprenticeship Act of the Province of Ontario.

The program has been in effect in other "designated trades" for some 30 years, and it is considered quite successful.

As applied to refrigeration, the Apprenticeship Act requires that all persons between 16 and 21 years of age employed in the trade must be indentured and registered with the Apprenticeship Branch of the Department of Labor.

Applications must be made immediately upon entrance into the trade, and both employer and apprentice are responsible for seeing that application is submitted.

Apprenticeship is four years as apprentice and one year as junior mechanic. Wage scales are:

First year—not less than 30% of journeyman's wages.

Second—not less than 40%.

Third—not less than 50%.

Fourth year—not less than 70%.

The contract between employer and apprentice can only be transferred with full consent of all parties concerned, and no apprentice may leave his employer without notice to the Director of Apprenticeship.

Apprentices must attend special training courses set up by the Dept. of Labor. There are no fees for the courses. During attendance, a living allowance is paid the apprentice by the Dept. of Labor.

The employer must make the necessary arrangements to enable the apprentice to attend special training courses set up by the Dept. of Labor.

Those persons intending to go into business themselves may not have to concern themselves directly with apprenticeship programs and courses of study. On the other hand, they will need business knowledge which is not normally supplied. (Next: Manufacturers' Schools.)



Armaflex is extremely flexible, follows contours of piping or tubing without special cutting.

Highly flexible Armaflex pipe covering goes on fast, cuts labor costs in half



Look for Andy Armaflex on displays, windows, and door decals. He identifies the wholesaler who sells Armaflex.

So flexible it can be tied in knots, Armaflex pipe covering helps you speed the insulation of fluid cooling lines. It reduces labor costs as much as 50% compared with the cost of applying conventional insulations to pipes and fittings. Armaflex can be slipped on pipe or tubing before connections are made. It follows contours readily. Or, the covering may be slit lengthwise, snapped in place, cemented at the joints. Fitting covers are quickly fabricated from miter-cut pieces.

Made of foamed plastic, Armaflex has a closed cell structure that seals out air or moisture. No separate vapor barrier is needed. Armaflex is an un-

usually efficient insulator, with a k-factor of 0.28 at 75° mean temperature.

Because Armaflex now comes in three wall thicknesses— $\frac{1}{8}$ ", $\frac{1}{4}$ ", and $\frac{3}{8}$ "—you can apply the economical amount* of insulation needed to stop condensation on lines operating down to zero. Armaflex is available in 6' lengths and sizes up to 3" I.P.S. For larger piping, Armaflex sheets are used.

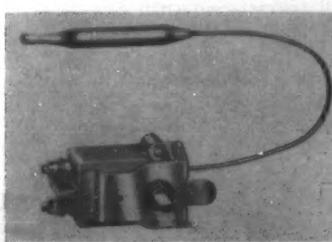
* Recommended Armaflex thicknesses for various service conditions are contained in a free descriptive booklet. For your copy, write Armstrong Cork Company, 2210 Parsons Street, Lancaster, Pennsylvania.

Armstrong INSULATIONS

What's New

Air Conditioning & Refrigeration News, October 13, 1958

Thermostat Is for Close-Quarter Applications



ble heaters, its size and versatility, according to the company, makes the unit readily adaptable to many commercial, scientific, and agricultural applications on any non-inductive load not exceeding 5,000 w.

The thermostat is 2 $\frac{1}{2}$ in. by 11 $\frac{1}{4}$ in., by 1 $\frac{5}{8}$ in., making it adaptable to narrow baseboard heaters and other close-quarter applications.

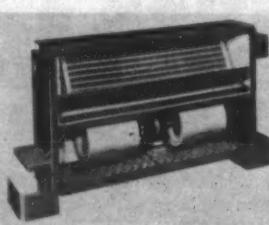
Both 6 in. and 12-in. capillary lengths are standard with other lengths available. For areas requiring a thermostat having double-pole disconnect, "Series 262" controls are available.

Designed primarily for electric baseboard, wall heaters, and porta-

Bench Shear Eliminates Die, Blade Changing

A lightweight bench shear that 110 Forbes St., Rockford, Ill. will cut flats, angle iron, rounds, and bar stock without changing angle iron, 10 gauge flat stock, dies or cutting blades is available from its manufacturer, Whitney Metal Tool Co., Dept. AC&RN, announcement said.

Room Conditioners Offer Choice of Arrangements



A new line of "Diaflo" individual room air conditioners is now available with a wide choice of installation arrangements from American Blower Div., American Standard, Dept. AC&RN, Detroit 32.

The fan-coil units are designed for summer cooling and winter heating of multi-room structures.

Diaflo air conditioners are available in either of two basic units, vertical or horizontal. The vertical design may be used with standard top-discharge enclosure, free-standing front-discharge enclosure, or custom enclosure having either

top or front discharge. The horizontal design for ceiling mounting, is used with either standard or custom enclosures.

The new units are available in four sizes, 200, 300, 400, and 600 c.f.m. They may be used with or without outside air for ventilation.

Water-Repellent Insulation Available

Introduction of a patented water-repellent insulating material for block and cavity wall construction has been announced by Zonolite Co., Dept. AC&RN, 135 S. LaSalle St., Chicago 3, Ill., producer of vermiculite.

Field tests have indicated that substantial reduction in heating and cooling costs can be realized through use of the material, with resultant savings in size of air conditioning and heating units, according to the company.

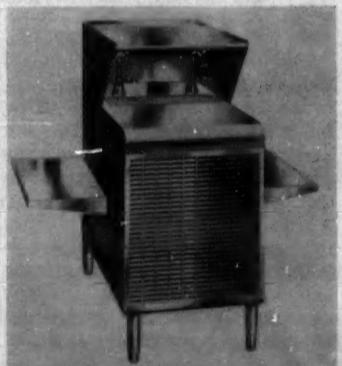


High Velocity Air Valve Introduced

A new high velocity air valve, composed of gang operated, neoprene vane sections, is now available from Barber-Colman Co., Dept. AC&RN, Rockford, Ill.

It provides simple, positive control of velocities and pressures and assures linear control of air volume, according to the company.

"Designed for use in a variety of applications, the model R can be used in single duct systems to control velocities and to balance the system, or in double duct applications to mix hot and cold air and to control velocities," it was explained.



Water Service Station Has 2 Water Arms

A self-contained refrigerated water service station with two fill-glass water arms is now available in a stainless steel cabinet 2 ft. wide, according to Bastian-Blessing Co., Dept. AC&RN, 4203 W. Peterson Ave., Chicago 46.

Below the water arms is a drip plate and above them a glass tray rack. Additional side racks are optional. The front of cabinet is a louvered ventilating panel, behind which the water cooler and pull-out condensing unit are installed. Cooler has a capacity of 15 g.p.h., chilling water from 70° to 40°.



Adds 2 Boiler Models

Addition of two new models to its "Hydrolo Series" residential boiler line has been announced by the Mt. Hawley Mfg. Co., Dept. AC&RN, Peoria, Ill.

The new models, the Hydrolo "33" and the Hydrolo "36" (pictured) have respective net outputs of 138,750 B.t.u.h. and 189,000 B.t.u.h., it was stated.

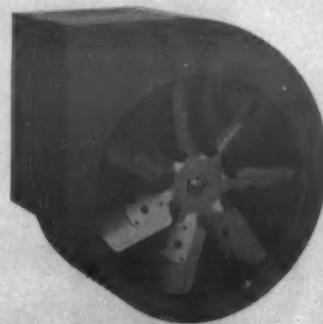
Available in oil-fired models only, these units are ASME coded, compact in size, and have the added advantage of full wet base design, the company said.

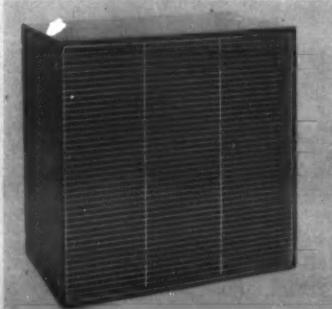
TRY
THIS
FOR SIZE

IT'S THE GREAT NEW TORRINGTON MIXED-FLOW RADIAx | 6 SIZES FROM 300 TO 3000 CFM | SAVINGS UP TO \$10 PER UNIT | SIZE, WEIGHT AND MOTOR ECONOMY | PLUS TORRINGTON REPUTATION | FULL DETAILS AND ENGINEERING SERVICE ON REQUEST

IN YOUR
'59 DESIGNS

THE TORRINGTON MANUFACTURING COMPANY
TORRINGTON, CONNECTICUT • VAN NUYS, CALIFORNIA • OAKVILLE, ONTARIO



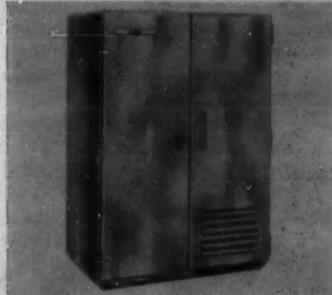


Air Purifier Uses Atomic Sub Principle

Utilizing the same basic principle of air purification as employed on our atomic submarines, Barnes-Bey-Cheney Co., Dept. AC&RN, Cassady at Eighih, Columbus 19, Ohio, has recently introduced its redesigned light-duty cabinet air purifier for home and office.

Combined in a single case is a circulating fan, dust filter, and an activated charcoal filter.

The unit, called the Breeze, is available in two sizes: Model SBB, size 14 by 14 by 10, and model SBC, size 22 by 22 by 12. A lightweight supporting stand is optional equipment for the larger unit.

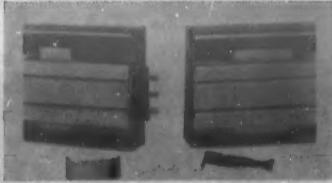


Utility Introduces New 'Luxury Line'

New "Luxury Line" refrigerators and freezers have been announced by Utility Refrigerator Co., Dept. AC&RN, 5871 Rodeo Rd., Los Angeles 16.

Over 96 different models ranging from 15 cu. ft. to 95 cu. ft., reach-in or pass-through, remote or self-contained, are available with a choice of baked white enamel or stainless steel exterior and aluminum or stainless steel interior, the company said.

The line features "smooth, clean-cut lines, plus many unique space-saving and labor-saving devices," according to the announcement.



Perimeter Heaters Plug Into Each Other

A new plug-in type electric convection perimeter heater, known as the Meier "Tandem 500," is being manufactured by Meier Electric & Machine Co., Inc., Dept. AC&RN, 3525 E. Washington St., Indianapolis 7.

The heater is composed of a thermostat section or a starter section, heater section (as many as are needed for the perimeter), and inside corner sections.

"The current connection to the unit is made through the thermostat or starter section," it was explained. "All subsequent sections plug into each other as they are affixed to the wall. The Tandem 500 has a low wattage requirement per foot—143 watts."



'Sealed Skin' Metal Conduit Announced

A new line of liquid-tight flexible metal conduit named "Sealed Skin" has been announced by The International Metal Hose Co., Dept. AC&RN, Bellevue, Ohio.

Designed to meet Joint Industry Conference (J.I.C.) requirements, the conduit is used for heating and air conditioning equipment.

It is said to be easy to install, even in "U" bends or crowded quarters.



A new factory-assembled, horizontal, oil-fired winter air conditioner has been developed by the Thatcher Furnace Co., Dept. AC&RN, Garwood, N.J.

Designated the "Comet 581-84 Series," the unit features the "Cerafelt" combination chamber made of light-weight, unbreakable refractory fibers designed to absorb sound and insure low heat conductivity, the company said. A cold air return is provided with built-in filter rack.

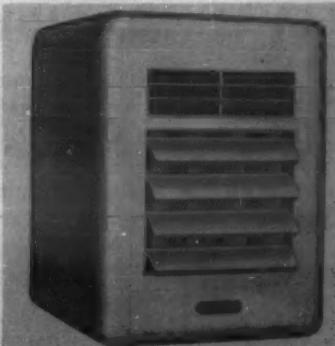
Three factory-installed eye hangers are provided for overhead installation. The cabinet is insulated by glass fiber with an aluminum foil facing. A direct drive blower is standard, although speed control or belt drive is optional at extra cost.

The furnace measures 66½ in. long, 23 in. wide, and 25 in. high. It has an output at the bonnet of 84,000 B.t.u. with an input of 105,000 B.t.u.

Unit Heater Designed For Low Ceilings

A new, compact-design gas unit heater it has introduced solves the problem of installing unit heaters in rooms with low ceilings, according to Hastings Air Control, Inc., Dept. AC&RN, Omaha 5, Neb.

The new series is called "Micro-Heaters." Only 22½ in. high, the units have input ratings of 25,000 to 75,000 B.t.u.h., the company said. Other models complete the air distribution louvers.



line to 250,000 B.t.u.h. All are AGA approved for natural, L.P., mixed, and manufactured gases.

The Micro-Heaters also feature a 10-year heat exchanger warranty, "ultra-quiet" operation, electrically-welded aluminized steel heat exchanger, stainless steel ribbon burners, fan delay switch, summer fan switch with pull cord, bottom access panel, and four-way air distribution louvers.

McQUAY
Means Quality

FOR EVERY REFRIGERATION OR AIR CONDITIONING NEED

Pacemaker Unit Coolers. Ten models.

Radial Unit Coolers. Eight sizes.

Two Way Unit Coolers. Five sizes.

Space Miser Unit Cooler. Wide range of sizes in normal and low temperature units.

Ceiling Mounted ZEROPAK Product Cooler. Six compact models.

Hideaway Seasonmaker Air Conditioner. Four sizes, ½ to 5 ton nominal cooling capacity.

ZERO FROST Unit Coolers. Low temperature coolers in eight sizes.

Floor Mounted Seasonmaker Air Conditioner. Four sizes, ½ to 2 ton nominal cooling capacity.

Floor Mounted Product Coolers. Nine sizes, 4, 6 or 8 row coils.

Vertical Residential Evaporator. Five models in 2, 3, 4, 5 and 7½ ton nominal capacities.

Aircon Air Cooled Condensers. Available up to 50 tons in a single unit.

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Contact your nearest McQuay wholesaler, or write direct to
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AIR CONDITIONING • HEATING • REFRIGERATION



EVAPORATIVE CONDENSERS

Some years ago Baltimore Aircoil Co., Inc. prepared a manual on evaporative condensers, covering all phases of the subject from theory of operation to installation and service practices, and most of it was published in the News. Recently the manual was brought up to date by John Engalitcheff, president, and Thomas F. Facius, research engineer of Baltimore Aircoil Co., and the News again publishes the major parts of the manual as a service to its readers.

Part 1—Theory and Construction

Brief Theory

The Evaporative Condenser has proved to be one of the most modern means of conserving water in the air conditioning and refrigeration industry. It was designed to alleviate the problems arising from the use of water-cooled condensers which waste the cooling water to the sewer.

In water-cooled condensers, the heat extraction depends entirely on the water sensible heat gain. With an average water temperature rise of 20° , there is an equivalent "pick-up" of approximately 20 B.t.u./# of water. In the evaporative condenser, however, the heat extraction depends on the evaporation of water. Since it takes approximately 1,000 B.t.u. to

evaporate one pound of water, the "pick-up" is 1,000 B.t.u. per pound instead of 20.

This one pound of water in an evaporative condenser theoretically does the equivalent work of 50 lbs. of water in a water-cooled condenser, or the evaporation condenser requires only 2% of the water required in a water-cooled condenser. In actual practice, however, this theoretical saving cannot be attained, and the water used in evaporative condensers approaches 5% of that used in water-cooled condensers.

Construction of Evaporative Condensers

Basically, the evaporative condenser is a cooling tower in which is incorporated a condensing coil. It may be either a "Draw-Through" or "Blow-Through" (Fig. 1) type unit. The principle of operation is the same in both cases, with only the location of the fan being

changed as the name implies. The circulating pump draws water from the pan and forces it through the spray header and branch circuits. Spray nozzles, evenly spaced over the coil of the evaporative condens-

er, discharge the water in minute droplets onto the coil surface. Depending on the type of condenser, the fan either draws or forces air in through the falling water and through the coil of the evaporative condenser. The air evaporates the small quantity of water required for cooling, but also carries along with it some unevaporated spray water. This entrained spray water is removed from the air in the eliminator section and eventually drips down into the pan. Make-up water is introduced through the float valve as the water is evaporated.

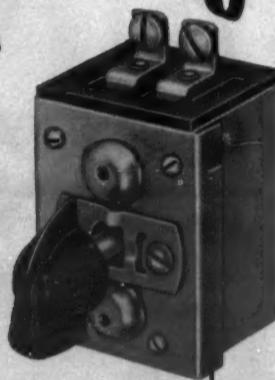
B. A. C. "Blow-Through" Evaporative Condensers are designed for either centrifugal fan or propeller fan operation. The propeller fan units operate at considerably lower fan horsepower than the centrifugal type units. Although the propeller fan units save horsepower, they operate at higher sound levels, and should be used only on industrial applications where noise is not a factor.

Basic Thermodynamics

Without going too deeply into theory, Fig. 2 traces the condition of the air as it passes through the evaporative condenser. It is assumed that the air enters the condenser at some unsaturated condition, Point "A". Before reaching the coil surface, it is washed with falling water; and by the time it enters the coil it can be assumed for convenience, that it is saturated adiabatically,

(Continued on next page)

Compact, low cost, high capacity thermostats for cooling applications

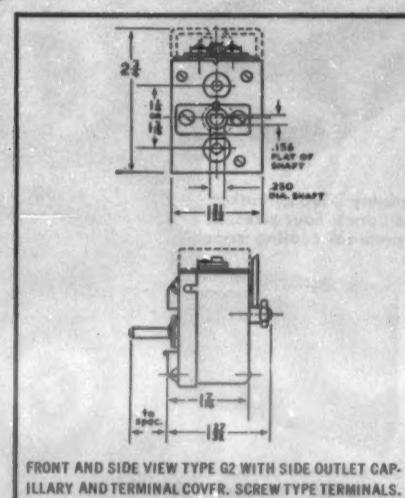


New Wilcolator Type G2 features improved, snap-action switch for higher contact ratings

With its improved, snap-action contact mechanism, the new Wilcolator G2 thermostat offers you much higher contact ratings than have hitherto been available in such a compact unit. Measuring only $2\frac{3}{4} \times 1\frac{1}{8} \times 1\frac{1}{8}$ in., it nevertheless has ample capacity for heavy duty appliances and medium industrial requirements.

Temperature differential is adjustable and can be factory set to your specifications. The G2 unit is available with Constant Cool position (motor load) where required. Contact mechanism not affected by vibration. No TV or radio interference. All steel parts heavily plated for corrosion resistance.

For complete information, write The Wilcolator Company, 1001 Newark Ave., Elizabeth, N.J. In Canada: Wilcolator (Canada) Ltd., 221 Evans Ave., Toronto 14, Ont. Export Address: Wilcolator, 1010 Schaff Bldg., 1505 Race St., Philadelphia 2, Pa.



SPECIFICATIONS

- Standard temperature range: 55°F-95°F
- Special temperature ranges: To customer's requirements
- Switch mechanism: Single pole, double break, snap action
- Motor ratings: 120 to 240 v a-c; running current—14 amp; locked rotor—60 amp
- Mounting: Back of panel or in enclosure
- Standard shaft: $\frac{1}{4}$ in. diam. flattened to .156 in.; length to customer's specifications
- Terminals: Screw type, AMP or Arkles

THE **Wilcolator**
COMPANY

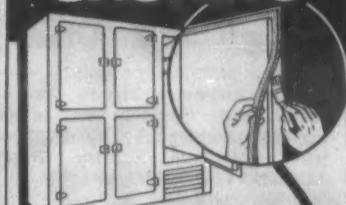
MANUFACTURERS OF LIQUID EXPANSION ELECTRIC THERMOSTATS FOR:

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TEMPRENE Eliminates removal of back pan.
No screws to remove or loosen.

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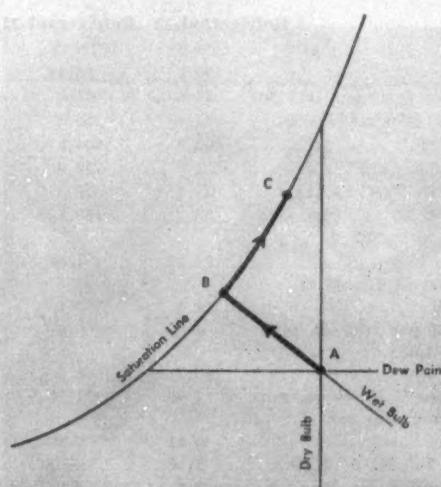


FIGURE 2—Psychrometric analysis of air path through an evaporative condenser.

Point "B." Then as it passes through the coil, it absorbs heat from the coil and the surrounding water. This increases the total heat content of the air, and since it is continually being washed with falling water, the process follows the saturation line.

The final temperature of the air leaving the condenser, Point "C," depends on the quantity of air used which is dependent upon the design of the condenser.

From the above discussion, it is seen that the performance of an evaporative condenser depends entirely on the load imposed upon it and the wet-bulb temperature of the entering air. The air dry-bulb temperature or relative humidity has no effect on the performance of an evaporative condenser.

Fig. 3 shows a typical refrigeration cycle on a Temperature-Entropy diagram. The refrigerant enters the condensing coil at a superheated condition, Point "A." The superheat is re-

moved, and the saturated vapor condition, Point "B," is quickly reached. As it progresses farther through the coil, it begins to condense along a constant temperature line "B-C" until

reaching a completely liquid amount of liquid subcooling, indicated by Point "D." B.A.C.

Theoretically, the function of the condenser is now complete, but actually most condensers are designed with sufficient coil surface to produce a certain

(To Be Continued)

condensers are designed to produce approximately 10° F. subcooling under normal operating conditions with Refrigerant-12.

Hussmann Acquires Duro-Consolidated

ST. LOUIS—W. B. McMillan, president and chairman of the board of Hussmann Refrigerator Co., announced the acquisition of Duro-Consolidated, Inc., of Redwood City, Calif. through an exchange of all of the capital stock of Duro-Consolidated for 31,584 shares of the common stock of Hussmann Refrigerator.

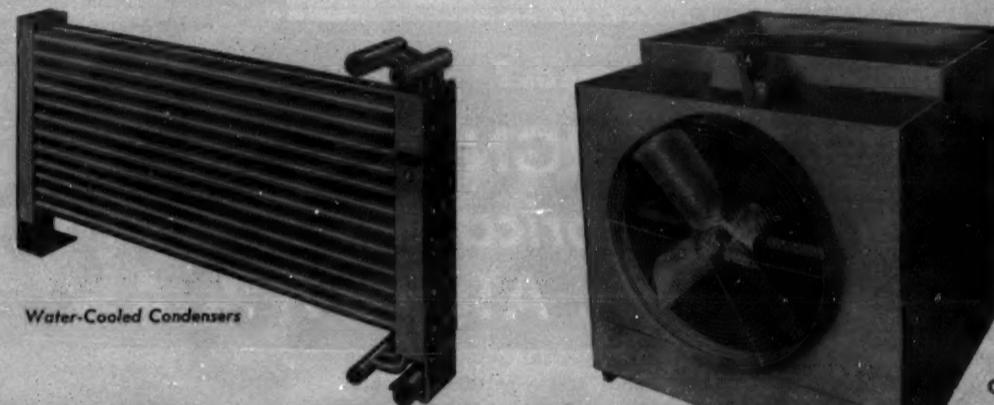
Duro-Consolidated manufactures metal display shelving and allied lines used in both food and non-food stores which is marketed principally on the West Coast under the name of Daley Store Fixtures.

McMillan said this new addition to the Hussmann family will be operated as a wholly owned subsidiary and will do business under its own identity.

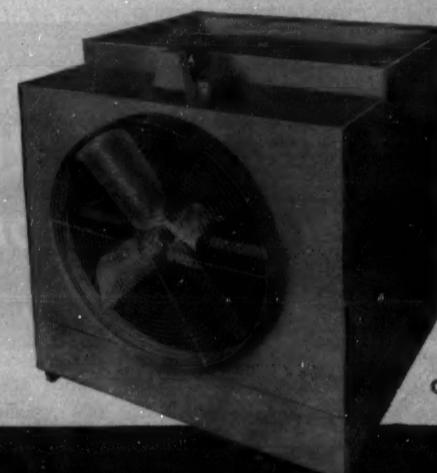
FIG. 3—Temperature-entropy diagram showing theoretical refrigeration cycle. Condensing process (solid line).

amount of liquid subcooling, indicated by Point "D." B.A.C.

Condensers are designed to produce approximately 10° F. subcooling under normal operating conditions with Refrigerant-12.



Water-Cooled Condensers



Cooling Towers

Which Condensing Method is Better— AIR-COOLED or WATER-COOLED?

There is really no pat answer to this, because many considerations are involved. Cost of electricity, ambient wet bulb temperatures, amount of dust and dirt in the air, compressor capacity at elevated temperatures—these are some of the factors involved. Each job must be considered individually, but your Halstead & Mitchell representative is available for help in deciding.

Whichever method you choose, you'll find an H&M product that meets the requirements. Operating and maintenance costs will be lower, too.

H&M Cleanable, Counterflow, Water-Cooled Condensers in $\frac{1}{2}$ thru 25 tons provide efficient cooling, and have a highly favorable fouling factor.

H&M Cooling Towers with the exclusive 20-year Guarantee against failure due to rotting or fungus attack of the wetted deck. Quiet, belt drive, propeller fan models in 5 thru 125 tons. Direct drive models in 2 thru 7½ tons. Take-Aparts in 5 thru 100 tons. Centrifugal fan towers in 5 thru 25 tons for use with ductwork. All towers have permanently sealed fan bearings, and are specially coated against corrosion after complete assembly.

H&M Turbu-Flo Air-Cooled Condensers in 3 thru 50 tons are designed for full performance even on high temperature days. Wide fin spacing prevents clogging. Exclusive Turbu-Flo fins provide up to 15% greater capacity. Furnished in direct or belt drive; for floor or ceiling mounting.

H&M Finned Surface Coils with Turbu-Flo fins for more efficient heat transfer are available in a wide range of sizes for heating, cooling or tempering. Direct expansion coils complete with refrigerant distributor; water coils for use with chilled or hot water; steam coils in standard or non-freeze types.



Air-Cooled Condensers

HM
Halstead & Mitchell

Ask for Halstead & Mitchell products at your distributor's or write for more detailed information. Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.

WATER-COOLED CONDENSERS • COOLING TOWERS
AIR-COOLED CONDENSERS • FINNED SURFACE COILS

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1935, AND JULY 2, 1946 (Title 39, United States Code, Section 333) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF

Air Conditioning and Refrigeration News published weekly at Detroit, Michigan for October 1, 1958.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Business News Publishing Company, Detroit, Michigan.

Editor, George F. Taubeneck, Grosse Pointe, Michigan.

Managing editor, Phil B. Redeker, Detroit, Michigan.

Business manager, Edward L. Henderson, Birmingham, Michigan.

2. The owner is: If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Business News Publishing Company, Detroit, Michigan.

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3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

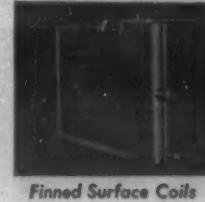
None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 13 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

22,500.
Edward L. Henderson,
Business Manager
Sworn to and subscribed before me this 2nd day of October, 1958.

[SEAL] Vincenzo V. Mogyorodi
Notary public, Wayne County, Michigan
(My commission expires Jan. 1, 1962.)



Finned Surface Coils

Air Distribution Requirements In Year-Round Air Conditioning

Part 3—Fundamentals of Equipment

By Frank D. Klein, Chief Engineer, Governair Corp.

This part will cover component equipment as assembled integrals of a system as well as the accessories necessary to their various functions. The discussions will be devoted to Cooling and Heating with only that feature of Ventilation as a side effect, made possible through the inherent features of the type of equipment used.

Discussion on the Cooling Cycle will cover only the (1) Direct Expansion System and the (2) Indirect Expansion System (chilled water) without the exploration of Air Washing, etc.

The Heating Cycle discussion

will cover only Direct Fired Gas Heating and the indirect phase such as gas as the fuel for hot water and steam media. This course of action is taken because of the general acceptability and application popularity of these systems.

Because the compressor is generally accepted as the "heart" of direct expansion systems, the discussion will start with this component, and will deal only with the reciprocating type, inasmuch as a discussion of the centrifugal type constitutes a complete study in itself.

Since this study is devoted to

the Direct Expansion System and to Comfort Conditioning, what follows is applicable in the suction temperature ranges of 30°-50° F. generally.

To understand the function and operation of the compressor is to basically understand the Refrigeration Cycle. To understand both is to understand the chemical and physical properties of the common refrigerants used.

While there are many so-called "refrigerants" which can be used under various conditions of compression application, in fact there are but two most common in the lexicon of the everyday-applicator and these are Refrigerant-12 and Refrigerant-22. Some of the pertinent characteristics of the refrigerants are:

	Refrigerant-12	Refrigerant-22
1. Chemical symbol	CCl ₂ F ₂	CHClF ₂
2. Molecular weight	120.9	86.48
3. Boiling temperature @ 0 p.s.i.g. (F.)	-21.6	-41.4
4. Freezing temperature @ 0 p.s.i.g. (F.)	-252.0	-256.0
5. Critical temperature (F.)	232.7	204.8
6. Critical pressure (p.s.i.a.)	582.0	716.0
7. Evaporator pressure @ 5° F. (p.s.i.g.)	11.8	28.3
8. Condensing pressure @ 86° F. (p.s.i.g.)	93.2	159.8
9. Ratio of compression @ 86° F., 5° F.	4.07	4.06
10. Net refrigeration effect of Liquid @ 86° F., 5° F. B.t.u./lb.	51.1	69.3
11. Refrigerant circulated per ton-lb./min.	3.92	2.89
12. Liquid circulated per ton-86° F., 5° F., cu. in./min.	83.9	68.0
13. Specific volume of vapor 5° F., cu. in./min.	1.49	1.25
14. Compressor displacement per ton-86° F., 5° F., c.f.m.	5.81	3.60
15. Horsepower per ton-86° F., 5° F., hp.	1.002	1.011
16. Coefficient of performance, 86° F., 5° F.	4.7	4.66
17. Temperature of compressor discharge... Note: Above values for performance based on 5° F. evaporating and 86° F. condensing. Some other useful values are:	100.0	131.0
18. Heat content of saturated vapor in 5° F. evaporator B.t.u./lb.	78.79	105.58
19. Heat content of liquid leaving 86° F. condenser B.t.u./lb.	27.72	36.28
20. Cubic foot of liquid per lb., 86° F....	.0124	.01363

The above are a mass of figures tabulated for reference; they mean little unless one understands why they are necessary as a ready reference. Obviously they are meant to be practical and the following are the reasons for this. (Chemical Formulae and MW ignored.)

WHY BOILING PRESSURE AND TEMPERATURE SHOULD BE KNOWN

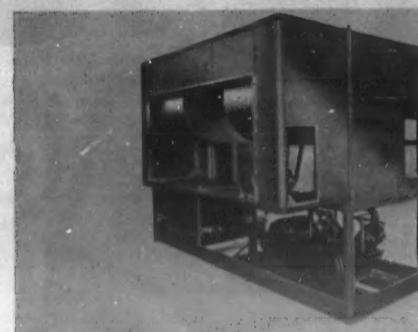
The maintenance of a differential between crankcase or suction pressure and atmospheric pressure is imperative, even if the reciprocating compressor is of the so-called Hermetic type. The smaller this differential the less probability of the refrigerant leaking from the system, or of outside air, moisture, etc., into the low side at the shaft seal.

Further, the coil or evaporator temperature always establishes the evaporator pressure, the refrigerant used must be one having a saturation pressure, at minimum evaporator operating temperature, above Zero Gauge.

Obviously enough the refrigerant must have a freezing temperature well below the operating temperature of the evaporator. (The influence of refrigerant-water mixtures on this property will be discussed later.)

(To Be Continued)

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HOW MUCH WILL THEY BUY?

Estimates indicate a total volume of ten billion dollars over the next ten years. Aside from new construction, the saturation of air conditioning installations in offices is less than five per cent, and in factories—less than one per cent. In 1957, this market was estimated at nearly 600 million dollars, a gain of almost fifteen per cent over 1956. This increase was the largest in the industry.

* WHAT PRODUCTS DO THEY BUY?

In addition to air conditioning units and their usual accessories, such as condensers, cooling towers, coils, refrigerants, and motors, engineered air conditioning systems for large buildings, factories, etc. require such items as ducts and duct materials . . . controls . . . piping . . . insulation . . . air moving equipment . . . air cleaning and washing systems . . . pumps . . . diffusers and grilles . . . boilers . . . heat exchangers . . . furnaces . . . dehumidifiers . . . humidifiers . . . vibration eliminators.

WHAT DO THEY READ?

Just as you depend upon your newspaper for the latest news and information, so do these contractors and engineers turn to AIR CONDITIONING & REFRIGERATION NEWS for the timely facts and information concerning their job, their industry. The NEWS is the only weekly and the only newspaper in the industry. (And it has a 32 year history of dependable accuracy.)

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WOODWARD 2-0224, AL SCHILDHAMMER.

TECHNICAL CENTER

By Frank J. Versagi, Technical Editor

High Temp—Whose Responsibility?

Since publication of a column on the general subject of high discharge temperatures in refrigeration systems, we have had extensive verbal and written comment and opinion. One major point in the original article was that authoritative opinions differ on what limits should be set for discharge temperatures, and that there seems to be nowhere to assign responsibility.

Manufacturers of compressors, of condensing units, of entire systems—and of all components which make up these items are blamed by someone for problems occurring inside a refrigeration system—apparently due to excessive temperature.

There are those who feel the answer is simple—that the refrigerant manufacturers can solve all the problems by creating a refrigerant which "doesn't care how hot it gets." This suggestion from a service contractor and, surprisingly, from a couple of design engineers working for major companies in the industry.

Behind this hope lies the feeling that things weren't so bad until Refrigerant-22 was introduced, and things can get better if duPont, General, Pennsalt, or somebody will just come up with a better refrigerant.

Others just as quickly point to the refrigerant oils. Why not an oil which just doesn't break

down when things get hot—say 350-400°?

In turn, the compressor designer, the service and installation man, the user, are all felt to have the magic key to solving this problem once and for all.

Behind these hopes for such simple solutions to internal problems is an oversimplified conception of the complexity of the inside of high and low side components. Not complexity from the mechanical layout, especially, but complexity from the standpoint of the wide range of materials and substances which are exposed to chemical and physical changes at varying temperatures.

High Temperatures Don't Always Start Breakdown

Another point: while high discharge temperatures serve to accelerate any breakdowns taking place, the high temperatures are not necessarily responsible for starting the breakdown.

A good example: R-12, when contained in a quartz container with no other materials present, is stable up to 1,200°. Add oil, the stability of the mixture decreases. Add oil, metals, and materials which are present in a practical refrigeration system, and breakdown temperature drops to the 2 and 3 hundreds.

So materials in a system are significant in internal troubles or the lack of them. All of the materials.

Thus, one manufacturer has recently introduced a new motor insulation which will withstand quite high temperatures. While commendable in itself, such an approach is only a partial solution, because other components in the system may not be able to take the temperatures which the new insulation material can withstand.

To be honest, it is extremely difficult for any one engineering staff to consider the effects of operational characteristics on everything which might be in a system. A compressor manufacturer, preoccupied—and rightly—with such things as piston, cylinder, valve design and materials can't help but give less

thought to slot liners in a motor. Other producers will similarly be concerned with specific problems and neglect the over-all picture.

There is no man in the industry today who can speak with authority on just what happens to, or what happens because of: iron, steel, copper, aluminum, zinc, nylon, teflon, Mylar, Formvar, cellulose, oil, oil additives, metal oxides, pipe dopes, fluxes, dirt, water, alcohol—all of these and more in all combinations under all sorts of operating conditions.

Yet all of these must be considered.

For example, we recently reported some findings by Dr. Steinle in Germany on the lack of effect of water in copper plating under some conditions. A few have commented that this proves how far we are behind German technology since we are still warning against moisture and water when they have proved it is without effect in refrigeration systems.

Two things are wrong with such a conclusion: first, these were findings from one group of tests and were contradicted in part by other tests by Europeans. Second, copper-plating is only one aspect of moisture problems. The effect of water on insulation materials and plastics are among other items which must be considered.

Another approach at the overall problem of internal disorders in a system is a study of the oils. There is a fond hope for an oil which will take moisture, refrigerant, metals, and temperatures from absolute zero to hell. One chemical company executive insists that, for practical purposes, such synthetic lubricants already exist, but they would cost on the order of \$10 per pound, which the refrigeration industry is unwilling to pay.

According to another report, over one year ago all major manufacturers of refrigeration equipment were notified of the development of a synthetic lubricant with properties making it especially suitable for use with

R-12 and R-22 at high or low temperatures. One informant reports that reaction to this announcement so far has been a deafening silence.

Plastic Coated Tube Proved To Be Offender

One of the major refrigerant suppliers reports an instance where a series of high sides were fouling with an unidentified sludge. Everybody was called in, compressor people, oil and refrigerant manufacturers, consultants. It turned out that the condenser manufacturer was using a plastic coated tube on the surface in contact with the refrigerant.

The coating had been used with R-12 without difficulty. Trouble started when R-22 was used. It developed that the solvent action of R-22 is enough different from that of R-12 to dissolve the coating partially and cause sludge.

Certainly this is not to blame R-22 for the difficulty. It does point out the misjudgment in holding, in such cases, "Everything is exactly the same as it was." Obviously, everything is not the same or there would be no difficulty.

Unfortunately, at this stage, there is no easy way to determine which of the myriad of variables possible is causing specific problems.

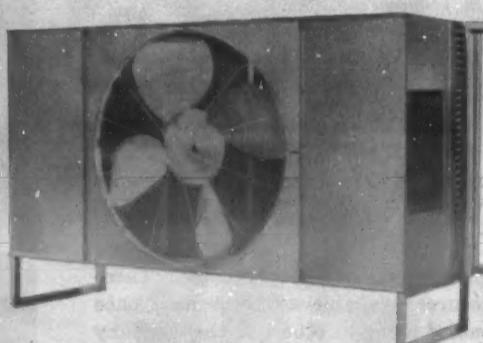
So we see that "high discharge temperatures" cannot be isolated in a test tube, so to speak, and examined separately from the many variables with which such temperatures are associated. There is a lot of miscellaneous information around the industry. Unfortunately, in too many cases, possessors of such information feel there is a commercial advantage either in exclusive possession of the information or in keeping the knowledge from becoming generally distributed.

Fixing responsibility for high temperatures and internal system problems is an unrealistic aim. More important is a freer exchange of information and more research sponsored by industry-wide cooperation.

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Servicing Automobile Air Conditioners

(Vol. 3)

BY C. DALE MERICLE

This is the first in the new series of articles on automobile air conditioners which has been prepared to enable the experienced refrigeration serviceman to cash in on this rapidly growing market.

New makes not previously discussed will be described in detail. Most of the series, however, will be devoted to 1958 models of the many makes of units that have already been discussed in the earlier articles. Data on these 1958 models will be limited to the changes made over preceding models.

It will be advisable, therefore, to refer to the previous articles, which are also now available in two handy manuals—Vols. 1 and 2 "Servicing Automobile Air Conditioners."

CHEVROLET (1)

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FIG. 3 shows 1958 Chevrolet under-dash "Cool-Pack" evaporator assembly with controls inset.

FIG. 2—Chevrolet 1958 "Cool-Pack" mounts evaporator under dash but likewise uses hot gas by-pass valve.



(Figs. 1 and 2). Earlier models employed a thermostat to cycle a magnetic clutch for this purpose. The clutch is continued in 1958 models, but its function is merely to turn the unit on or off, not to control temperature.

The "Cool-Pack" under-dash unit (Fig. 3) was also added to the 1958 line. This operates on 100% recirculated air and is entirely separate from the car heating system.

Now designated as the "Deluxe All Weather" system, the earlier model which combines cooling and heating functions and mounts the evaporator in the engine compartment was continued in 1958 with some changes.

Both 1958 Chevrolet systems use Refrigerant-12.

Compressor

A slightly larger Frigidaire compressor is employed on both 1958 systems.

The new compressor requires (Continued on next page)

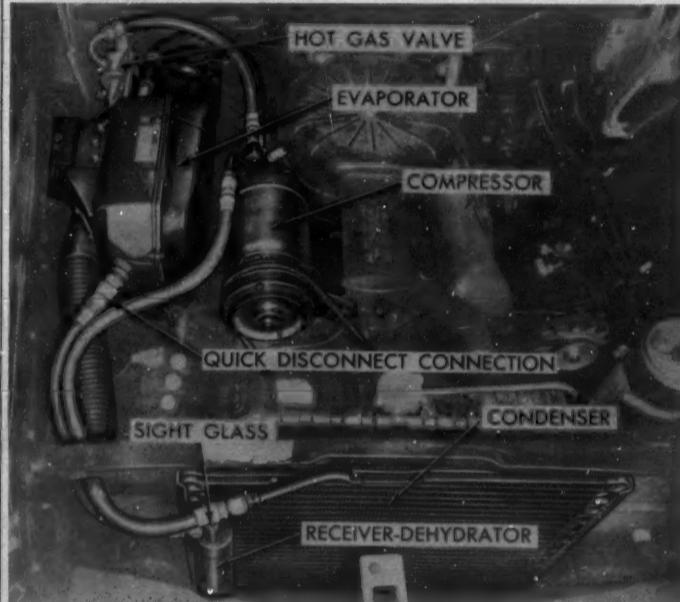


FIG. 1—Chevrolet's 1958 "Deluxe All Weather" system continues with evaporator in engine compartment, but employs modulating hot gas by-pass valve to control temperature.



FIG. 2—Chevrolet 1958 "Cool-Pack" mounts evaporator under dash but likewise uses hot gas by-pass valve.

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Auto Air Conditioners--

(Continued from preceding page) the use of Frigidaire 1,000 viscosity oil instead of the 525 viscosity oil used in the 1957 Frigidaire compressor.

As with earlier models, the compressor is driven through a magnetic clutch which is used to turn the system on or off but not to control temperature.

Compressor of the Deluxe system is equipped with hand shut-off valves on both the suction and discharge sides (Fig. 4). Cool-Pack compressor, however, has only a discharge shut-off valve, a Schrader type valve being incorporated in the low pressure gauge fitting (Fig. 5). This means that it is necessary to purge the entire Cool-Pack system to remove the compressor.

A compressor protective device known as a "superheat safety switch" (Fig. 6) will be

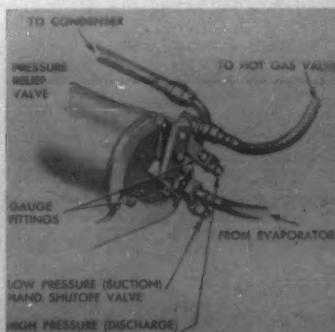


FIG. 4—Both suction and discharge shut-off valves are provided on 1958 Chevrolet "Deluxe" system compressor.



FIG. 5—Only discharge (high pressure) shut-off valve is found on compressor of 1958 Chevrolet "Cool-Pack" system.

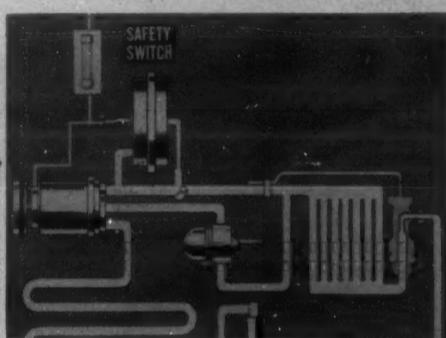


FIG. 6 shows where "superheat safety switch" is included in system on some 1958 Chevrolet air conditioners.

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PREST-O-LITE
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Includes torch handle, leak detector stem, 3 torch stems, regulator (for B or MC tank), 12½ ft. hose assembly, suction hose, and enameled steel carrying case.



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Acetylene regulator automatically maintains selected delivery pressure—calibrated screw for pressure adjustment.

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found on many 1958 Chevrolet units. This is a double chamber diaphragm switch (Fig. 7). One side of the switch is connected to the compressor low side gauge fitting to sense the pressure on the suction line at the compressor intake. Other side of switch connects to a gas-filled capillary and bulb clamped to the suction line at the compressor to sense the temperature of the line.

If an abnormal superheat condition occurs, perhaps as the result of a plugged line or screen, low oil level, or shortage of refrigerant, the resulting excessive temperature or superheat will make the safety switch contact an electrical connection in the compressor clutch lead, shorting the lead to ground and blowing the system fuse, thus shutting off the system.

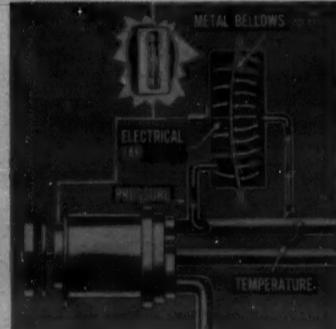


FIG. 7—Schematic illustrates how safety switch operates.

Condenser

Condenser, receiver-drier, and sight glass arrangement in the 1958 Chevrolet systems is essentially the same as in 1957 models.

Deluxe 1958 systems, as installed at the factory, use a

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Bulletin
736 part
winding starter

When motor starting currents are limited by power company regulations, the Bulletin 736 motor starter is frequently a low cost solution. After the part winding motor is accelerated for a preset interval, the second winding is connected in parallel across the line. The motor then goes to full speed and torque without line disturbance or lamp flicker.

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ALLEN-BRADLEY
QUALITY
MOTOR CONTROL

PATENTS have been omitted from this issue of the NEWS due to the extensive illustrations required for the opening instalment of the Third Volume of Servicing Automobile Air Conditioners. Next week the Patent Digest will resume.

special engine fan. This is a five-blade 18-in. fan with a viscous drive which is limited to a maximum speed of 3,200 r.p.m. regardless of engine speed.

Evaporator

Evaporator assembly of the 1958 Deluxe Chevrolet system, located in the engine compartment, is essentially the same as that used in 1957. A connection is provided at the evaporator outlet, however, for the hot gas bypass line.

Another change affecting evaporator operation is that the 1958 Deluxe system operates on either 100% fresh air or a com-

bination of 70% recirculated air and 30% fresh air.

Cool-Pack evaporator assembly, which is installed under the dash, houses the evaporator coil, thermostatic expansion valve, blower, and controls. Four adjustable air outlets (Fig. 3) are provided in the evaporator case, two on the front and one on each side. This unit operates on 100% recirculated air only, and is entirely separate from the heating system.

(To Be Continued)

THIS MAY BE YOUR MAN

Have trained thousands of heating men in air conditioning service in 48 states. Now have sales and service program for furnace and air cond. Eleven professional sales firms, backed by home study pamphlets. Help your dealers to help themselves. Making a trip east, may I visit you Mr. Mfg. & Wholesaler? Promise you something good. Write BOX A6114, this paper.

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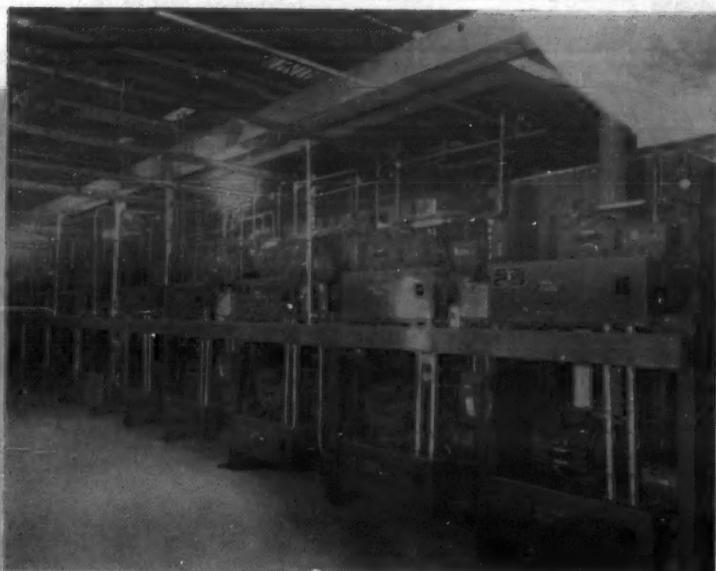
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